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JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

VOL. LXVII.

PART I. (HISTORY, ANTIQUITIES, &C.)

NOS. I TO IV.—1898: (WITH 14 PLATES).

EDITED BY THE

HONORARY PHILOLOGICAL SECRETARY.

"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease." SIR WM. JONES.

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CONTENTS

OF THE

JOURNAL OF THE ASIATIC SOCIETY OF BENGAL.

VOL. LXVII, PART I.—1898.

PAGE.

No. 1, (issued 11th May, 1898).

Notes on new inscriptions discovered by Major Deane.—By M. A. STEIN, PART I. (With Plates I–VII) 1

A Note on the Antiquity of Chittagong, compiled from the Tibetan works Pagsam Jon-Zañ of Sunpa Khonpo and Kāhbab Dun-dan of Lama Tārā Nātha.—By SARAT CHANDRA DAS, C.I.E., RAI BAHĀDUR 20

On the Kāçmīrī Noun.—By G. A. GRIERSON, C.I.E., PH.D., I.C.S. 29

Two Copper-plate Grants of Ratnapāla of Prāgjyōtiṣa in Āsām.—By DR. A. F. RUDOLF HOERNLE, C.I.E. (With Plates VIII–XIII) 99

A Note on the Identity of the great Tsang-po of Tibet with the Dihong.—By SARAT CHANDRA DAS, C.I.E., RAI BAHĀDUR ... 126

No. 2, (issued 1st August, 1898).

Numismatic Notes and Novelties, No. III. Ancient and Mediæval India.—By VINCENT A. SMITH, I.C.S. (With Plate XIV) ... 130

The Later Mughals (1707–1803).—*By* WILLIAM IRVINE, *Bengal Civil Service.* (Retired) 141

An unrecorded Governor of Fort William in Bengal.—By C. R. WILSON, M.A. 167

The discovery of a work by Āryadēva in Sanskrit.—By MAHĀMAHŌPĀDHYĀYA HARAPRASĀD SHĀSTRĪ, *Professor of Sanskrit, Presidency College* 175

Note on a Dialect of Gujarātī discovered in the District of Midnapur.—By GEORGE A. GRIERSON, C.I.E., PH.D., I.C.S. ... 185

PAGE.

No. 3, (issued 20th September, 1898).

On Primary Suffixes in Kāçmīrī.—*By* G. A. GRIERSON, C.I.E., PH.D., I.C.S. 193

On Secondary Suffixes in Kāçmīrī.—*By* G. A. GRIERSON, C.I.E. ... 221

An Account of Travels on the Shores of Lake Yamdo-Croft.—*By* SARAT CHANDRA DAS, C.I.E., RAI BAHĀDUR 256

No. 4, (issued 20th February, 1899).

An ancient inscribed Buddhistic Statue from Çrāvastī.—*By* THEODOR BLOCH, PH.D. 274

A new Inscription of Mahārāja Bhōja I., from Marwar, dated Harṣa Samvat 100.—*By* THEODOR BLOCH, PH.D. 291

The Memoirs of Bāyazīd (Bajazet) Bīyāt.—*By* H. BEVERIDGE, ESQ., I.C.S. (Retired) 296

The Cāṭēçvara Inscription of Anaŋgabhīma II. of Orissa.—*By* NAGĒNDRANĀTHA VASU, *Editor Viçvakōṣa* 317

The date of the Jagannātha Temple in Puri, Orissa.—*By* BABU MONMOHAN CHAKRAVARTI, M.A., B.L., *Deputy Magistrate, Gaya, Bengal* 328

Notes on the language and literature of Orissa, Parts III and IV.—*By* BABU M. M. CHAKRAVARTI, *Deputy Magistrate, Gaya* ... 332

Index to Journal, Vol. LXVII, Part I 387

LIST OF PLATES.

IN THE

JOURNAL OF THE ASIATIC SOCIETY OF BENGAL,

VOL. LXVII, PART I.—1898.

	PAGE.
Plates I–VII: Major Deane's new Inscriptions	1 ff.
Plates VIII–X: Copper-plate Grant of Ratnapāla Varma Dēva of Prāgjyōtiṣa (undated)	99 ff.
Plate XI: Conspectus of Test-letters	101 ff.
Plates XII–XIII: Copper-plate Grant of Ratnapāla of Prāgjyōtiṣa, Āsām	120 ff.
Plate XIV: Numismatic Novelties.	130 ff.

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ERRATA.

P.	L.	For	Read
32	Last	*tsok*^{u}	*tsọ̆k*^{u}
,,	,,	*tswạk*^{ū}	*tsọ̆k*^{ū}
34	16	*dob*^{u}	*dọ̆b*^{u}
,,	,,	*dwabiñ*	*dŏbiñ*
35	6	39	38
47	11–14	Substitute the following—	

If the final consonant of a noun in this declension is preceded by उ *u*, that उ *u* is changed to अ *a* in all cases except the Nominative Singular. Thus, वाँदुर् *wā̃dur*, a monkey; nom. pl., वाँदर् *wā̃dar*; instr. pl. वाँदरौ सूतिन् *wā̃darau sụ̄tin*: करुन् *karun*, the act of doing; acc. sg. करनस् *karanas*: प्वस्तुख् *pŏstukh*, a book; nom. pl., प्वस्तख् *postakh*.

75	4	*kunasatăth*	*kunasatath* (and so throughout the seventies up to 78).
,,	24	*kunanamăth*	*kunanamath* (and so throughout the nineties up to 99).
91	3	*w* or *v*	*w* or *v*, or
196	4	ग्राकंञ् *grākạñ*	ग्राकञ् *grakañ*
232	19	substances	substantives
294	8	प्रनिवासिनश्च	प्रति॰
295	12	शासनमनुभति॰	॰मति॰

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

VOL. LXVII.

PART II. (NATURAL HISTORY, &C.).

(Nos. I & II.—1898.)

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NATURAL HISTORY SECRETARY.

"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease." SIR WM. JONES.

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LIST OF CONTRIBUTORS.

Page.

ALCOCK, ALFRED;— *Materials for a Carcinological Fauna of India, No. 3. The Brachyura Cyclometopa, Part I. The Family Xanthidæ* 67

BHADURI, C. B., *and* BHADURI, J. B.;— *Contribution from the Chemical Laboratory, Presidency College, Calcutta. On Double Thiosulphates of Copper and Sodium*..... 234

FINN, F.;—*Note on the Long-Snouted Whip-Snake* (Dryophis mycterizans)..... 66

———;—*Note on the Seasonal change of Plumage in the males of the Purple Honeysucker* (Arachnechthra asiatica) *and of an analogous American bird* (Coereba cyanea)..... 64

KING, GEORGE;—*Materials for a Flora of the Malayan Peninsula*.. 1

———; *and* PRAIN, D.;—*Descriptions of some new plants from the North-Eastern Frontiers of India* 284

NICÉVILLE, LIONEL DE;— *On a small collection of Butterflies from Buru in the Moluccas* 308

———; *and* KÜHN, HEINRICH; *An Annotated List of the Butterflies of the Ké Isles. (Plate I.)* 251

RIDLEY, H. N.;—*New species of* Entada *from Singapore and Borneo* 305

Dates of Issue. Part II, 1898.

No. I.—Containing pp. 1–250, was issued on 5th August, 1898.

" II.—Containing pp. 251—321, was issued on 15th September, 1898.

Under orders of the Council the following system of transliteration will be adopted for the future in all publications of the Society. Authors of papers for the *Journal*, Pt. I, are particularly requested to adhere to it in their contributions.

055·1
002/5

A. FOR THE DĒVANĀGARĪ ALPHABET, AND FOR ALL ALPHABETS RELATED TO IT.

अ *a*, आ *ā*, इ *i*, ई *ī*, उ *u*, ऊ *ū*, ऋ *ṛ*, ॠ *ṝ*, ऌ *ḷ*, ए *e*, ऐ *ai*,
ओ *o*, औ *au*, ं *ṁ*, ँ *m̐*, ः *ḥ*

क *k*,	ख *kh*,	ग *g*,	घ *gh*,	ङ *ṅ*
च *c*,	छ *ch*,	ज *j*,	झ *jh*,	ञ *ñ*
ट *ṭ*,	ठ *ṭh*,	ड *ḍ*,	ढ *ḍh*,	ण *ṇ*
त *t*,	थ *th*,	द *d*,	ध *dh*,	न *n*
प *p*,	फ *ph*,	ब *b*,	भ *bh*,	म *m*
य *y*,	र *r*,	ल *l*,	व *v*,	(ळ *ḷ*)
श *ç*,	ष *ṣ*,	स *s*,	ह *h*.	

In the above the *virāma* has been omitted for the sake of clearness.

In Modern Vernaculars only; ड़ may be represented by *ṛ*, and ढ़ by *ṛh*.

Avagraha is to be represented by an apostrophe, thus सो ऽपि *sō 'pi*. *Visarga* is represented by *ḥ*, *Jihvāmūlīya* by *ḥ̲*, and *Upadhmānīya* by *ḥ̲*. *Anusvāra* is represented by *ṁ*, thus संसर्ग *saṁsarga*, and *anunāsika* by the sign ̃ over the letter nasalized, thus चँ *ā̃*, चाँ *ā̃*, and so on. The *udātta* accent is represented by the sign ´ and the *svarita* by ^. Thus, अग्निः *agníḥ*, जनिता *janitā́*, क्वा *kvā́*, कन्या *kanyā́*. The *anudātta* accent may be represented by ˋ. Thus, ते अवर्धन्त *tḗ àvardhanta*.

B. FOR PERSIAN (INCLUDING ARABIC WORDS IN PERSIAN) AND HINDŪSTĀNĪ.

(The system is not applicable to Arabic when pronounced as in Arabic-speaking countries) :—

Vowels.	Consonants.	Sounds only found in Hindūstānī.
اَ a	ب b	بھ bh
آ ā	پ p	پھ ph
اِ i	ت t	تھ th
اِی ī		ٹ ṭ
اے ē		ٹھ ṭh
اُ u	ث s	
اُو ū	ج j	جھ jh
او ō	چ c	چھ ch

Vowels.		Consonants.		Sounds only found in Hindūstānī.	
ـَيْ	ai	ح	ḥ		
ـَوْ	au	خ	kh		
		د	d	ڈ	ḍ
				ڈھ	ḍh
		ذ	z		
		ر	r	ڑ	ṛ
				ڑھ	ṛh
		ز	z		
		ژ	zh		
		س	s		
		ش	sh		
		ص	ṣ		
		ض	ẓ		
		ط	ṭ		
		ظ	ẓ		
		ع	‘		
		غ	gh		
		ف	f		
		ق	q		
		ک	k	کھ	kh
		گ	g	گھ	gh
		ل	l		
		م	m		
		ن	n		
		ں	when representing *anunāsika* in Dēva Nāgarī, by ˜ on the preceding vowel		
		و	w (or rarely v)		
		ہ	h		
		ی	y		
		Hamzah	’ (where necessary)		

The ل of the article ال in Arabic words should be assimilated before the solar letters; and the vowel *u* which often precedes the article and absorbs its vowel should remain attached to the word to which it belongs. Thus—اقبال الدولہ Iqbālu-d-daulah.

Tanwīn may be rendered by *n*—e. g., *ittifāqan*. *Alif-i maqṣūrah* should be rendered by *ā*.

Final ہ need not be written in Persian and Hindūstānī words, but should be written in Arabic words.

looked like ink. Moreover, though no one could say what the writing was by mere inspection of the block; some Khamptis on seeing a print taken from it, declared that it was a Lama, *i.e.*, Tibetan, writing. You will observe that the lines are similar, so that a translation of one will give the meaning of the whole. I should be obliged if you would send me a translation and also inform me what the block was used for. If my conjecture that it was used for printing from is wrong and the Khamptis have misled me, I can send you a rubbing of the block.

"The block is about 2½ inches thick and it has no marks on the sides or back to show that it has ever been fastened to anything else. It is supposed to have been brought down the Dihong by the last flood, which was probably caused by the breaking through of a dam formed across the Dihong by a former landslip. The flood rose to a great height in one night in fine weather and no other river came down in flood except the Dihong. The piece of wood was found by an Assamese who was looking for firewood."

Numismatic Notes and Novelties, No. III.[1] *Ancient and Mediæval India.*—

By VINCENT A. SMITH, I.C.S.

(With Plate XIV.)

[Read April, 1898]

INDO-BACTRIAN.

I. TELEPHUS.

Copper or bronze, rectangular, measuring ·95 by ·85 inch (= about 25 × 21 m.m.), and about ·15 thick. Weight 131 gr. [RAWLINS].

Obv. Zeus (or king) seated l., on throne with back; his r. hand advanced; in his l., sceptre.

Greek legend, ΒΑΣΙΛΕΩΣ (left) ΕΥΕΡΓΕΤΟΥ (top) [Τ]ΗΛΕΦΟΥ (right).

Rev. Figure (? female) to r., seated in crouching attitude, with r. arm extended; l. arm not visible.

Kharōṣṭhī legend, *Maharajasa* (on right) *Kaliṇakrama* (? on top) *sa Tēliphasa* (damaged, on left).

This very remarkable piece has recently been obtained by Mr. J. P. Rawlins at Haripur in the Hazāra District of the Panjab.

The figure of Zeus resembles that on the *reverse* of the ΣΩΤΗΡΟΣ coins of Hermæus (*B. M. Catal.*, p. 65, Pl. XV, 7). The reverse device is unique, and I am unable to explain it.

The reading of the king's name in Greek is certain. The Kharōṣṭhī equivalent could not be deciphered without the help of the Greek.

The coinage of Telephus is of extreme rarity, and has heretofore been known in silver only. The Elliot hemidrachm in the Bodleian cabinet was considered unique until Von Sallet identified two duplicates of it among the unnamed coins of the Guthrie collection at Berlin (Von Sallet, p. 131).

Professor Gardner (*B. M. Catal.*, p. 171) describes the Bodleian specimen as follows:—

[1] No. I. appeared in this *Journal* for 1897, Vol. LXVI, Part I, p. 1 ff.; No. II, appeared on p. 298 ff., of the same.

Obv. ΒΑΣΙΛΕΩΣ ΕΥΕΡΓΕΤΟΥ ΤΗΛΕΦΟΥ. Giant (Skythes ?), his body ending in three serpents; holds in each hand, hammer (?)

Rev. Kharōṣṭhī legend, *Maharajasa palanakramasa* (or perhaps, *pālanakṣamasa*) *Teliphasa.* Helios radiate, facing, clad in tunic and chlamys, holds long sceptre; beside him male figure wrapped in mantle, wearing wreath, or horned; in field, mon. Weight 37. Diam. ·7.

The long epithet which is the Prākrit equivalent of *εὐεργέτου* appears to be the same on the new coin as on the previously known hemidrachms. The reading is unfortunately doubtful.

Lassen read *parakaramasa*, which, as Von Sallet remarks, is certainly erroneous.

Cunningham suggested *kalānakramasa.* Von Sallet reads *kalana-* (or *kalaka-*) *kramasa.*

I agree that the first character is *ka*, and that the second consonant is *l.* But the new coin shows a short vertical stroke across the horizontal line of the *l*, which converts the character into *li*, or *lē.*

The third character, a hook turned to the right, is certainly either the cerebral *ṇ*, or the dental *n.* The first element of the word therefore reads *kalina*, or *kalēna.*

Lengthening the vowels it may be read as *kālīna*, (or *kālēna*), and the whole compound taken as *kālīnakramasa.* Mr. Bendall's *pālanakṣamasa* does not seem to be admissible. But, though *kālīnakramasa* seems to be a good reading of the letters, I do not understand how that form can be used as a translation of *εὐεργέτου*, 'benefactor.'[1]

INDO-BACTRIAN.

II. PEUKELAUS.

Copper or bronze, square. Diameter ·95 × ·85. Weight 142 gr. From Bannū District, west of the Indus. [RAWLINS].

Obv. Male figure, to front, looking l., wearing hat and short coat.

Legend, [ΒΑΣΙΛΕΩΣ ΔΙΚΑΙΟΥ ΚΑΙ] ΣΩΤΗΡΟΣ ΠΕΥΚ[ΕΛΑΟΥ]

Rev. City, turreted, standing, with r. hand outstretched over mon., and palm over l. shoulder.

Kharōṣṭhī legend, [*Maha*]*rajasa dhramikasa tradatasa Peukalaüsa.*

This interesting coin is unfortunately in poor condition, and a photograph of it cannot be distinct.

The coins of Peukelaus were published for the first time recently by Mr. C. J. Rodgers, who briefly noticed two specimens, (apparently obtained at Peshāwar?), of which one belonged to Sir Alexander

[1 I have not the slightest doubt that the reading of this word is *kalaṇakramasa*, or in Sanskrit *kalyāṇakarmaṇaḥ*, which corresponds exactly to the Greek *εὐεργέτου*.—Ed.].

Cunningham, and the other to Mr. L. White King.[1] The coin now published is, therefore, the third known specimen.

Cunningham called the figure on the obverse Apollo, and that on the reverse Demeter. I cannot say whether or not the figures were the same as those on Mr. Rawlins' coin. I cannot find the obverse figure on any other Bactrian coin.

The reverse figure is that of a turreted personified city, as on the square bronze coins of Hippostratus, with Triton obv. (*B. M. Catal.*, p. 60, Pl. XIV, 6). The mon. on the coin of Mr. Rawlins' is the same as that on the coin of Hippostratus with horseman reverse (*ibid.* Pl. XIV, 6).

It is clear, therefore, that Peukelaus was approximately contemporary with Hippostratus.

The legends ΔIKAIoY KAI ΣΩTHPoΣ, and *dhramikasa tradatasa* indicate that the period of Hippostratus and Peukelaus is not far removed from that of Menander. The same inference is suggested by the use in the Greek legend of the minute dot form of *omikron*.

The early part of the Greek legend is illegible, but the word ΣΩTHPoΣ can be read, and most of the letters of the Kharōṣṭhī legend can be made out on the original coin. The king's name is certain, ΠEYK, in Greek, and *Peük* in Kharōṣṭhī, being distinct.

The name Peukelaus necessarily recalls to the mind that of the city Peukelaïtis or Peukelaotis, mentioned by several Greek writers. Arrian tells us that in the dominions of the Assakenoi (probably the Açvakas) there was a great city called Massaka, the capital, and that, there was another city of great size, called Peukelaïtis, not far from the west bank of the Indus.[2]

This city seems to be the same which is described by Hiuen Tsiang under the name of Po-shi-kie-lo-fa-ti, or Puṣkalāvatī, which was situated across a great river about 9 miles (50 *li*) north-east of Kaniṣka's famous monastery at or near Peshāwar. The "great river" must be the Kābul. The distance stated by the Chinese pilgrim indicates that the site is to be looked for at the Nicetta or Nisattha of the maps rather than at Hashtnagar, where it is placed by Cunningham.[3]

If Peukelaïtis and Puṣkalāvatī are identical, which is not exactly proved, it seems quite possible that the Greek name may be derived from the name of the king Peukelaus, and not, as has hitherto been assumed, from a Prakrit form of Puṣkalāvatī.

1 *Num. Chronicle* for 1896, p. 269.

2 McCrindle "Megasthenes and Arrian," p. 180. Arrian was born about A.D. 90, and lived to an advanced age. The date of king Menander is approximately B.C. 100.

3 "Reports" II, 90; XIX, 96–110: Vivien de St. Martin in Julien's Hiouen Thsang, III, 308.

NORTHERN SATRAPS.

III SATRAP TARAKI.

Copper, circular; diam. ·6. Wt. 19 gr. obverse slightly convex, and reverse concave. Thin. [RAWLINS].

Obv. Bust to r., bare-headed, or wearing closefitting cap. Traces of Brāhmī letters in front of face. Dotted circle.

Rev. Legend in two lines, occupying field, in border :—

[महाक्ष]त्रप, [*Mahākṣa*]*trapa.*

तरकि *Taraki.*

This remarkable coin comes from the Bannū District. The characters are those of the northern alphabet of about the beginning of the Christian era, and closely resemble those on the known coins of the Northern Satraps of Mathurā.

KUṢAṆA.

IV KADPHISES I.

A. Copper, Diameter ·8. Wt. 63 gr. Rather thin coin, without rim. [RAWLINS.]

Obv. Bust to r., apparently bareheaded, Greek legend on r. margin, KoZoYΛo KAΔ[ΦIΣoY].

Rev. Soldier marching to r., wearing crested broad-brimmed hat, and armed with a long spear and convex shield.

Kharoṣṭhī legend——*la kaüsa kuṣa*——.

V B. Copper, Diameter ·7. Wt. 73 gr. Thick coin, with raised rim on reverse. [TALBOT.]

Obv. Bust to r., with a more Parthian appearance than that of A. Greek legend not distinctly legible, though apparently the same as on A.

Rev. Device as on A, in better preservation. Kharōṣṭhī legend in perfectly preserved letters, *Kaüsa kuṣanasa.*

The two coins above described have been sent to me by their owners from the Hazāra District. Mr. Talbot's coin first arrived, and was not fully intelligible until Mr. Rawlins' specimen was received.

The Greek legend *Kozoulo Kad* proves that the coin must be assigned to Kozoulo or Kozoula (Kh. *Kujula*) Kadphises, and not to Kadaphes, on whose coins the tribal name is written with the initial aspirate (Gr. χορανσν and Kh. *Khuṣanasa*), and the name or title of the king is written *Kuyula* in Kharōṣṭhī and *Kozola* in Greek, instead of the corresponding *kujula* and *kozoulo* or *kozoula* on the coins of Kadphises I. But, as will be shown later, it is possible that Kadphises I. and Kadaphes may be identical.

The Kharōṣṭhī legend on these coins is new. The reading *kaüsa* is perfectly certain; the first character is *ka*, the second is initial *u*, and the third is *sa*. The A specimen preserves a character in front of

kaüsa, which seems to be *la*, the last syllable of *kujula*. I interpret *kaüsa* as an abbreviated genitive corresponding to *Kadphisou* in the Greek.

The reverse device is as novel as the legend.

When about to send this paper to the press I found that two coins of this type, (though not quite identical) had already been described by Cunningham (*Num. Chron.* for 1892, *p.p.* 46, 64, Pl. xiv. (iv), 5, 6.)

He describes the king's head as "helmeted" and reads the Greek legend as KoZoYAo KA.....KoPΣAN: and the Kharōṣṭhī legend as *kuyula kasasa kuṣana Yaviiasa*. The second word on the coins now published is certainly *kaüsa*, not *kasasa*. It is impossible to mistake the character for *u*, which is a hook with loop at foot.

The following statement compares the newly discovered coins with the related types previously known, which are:—

I. Hermæus.

Obv. Bust of the King r., diademed:—

BAΣIΛEΩΣ ΣTHPoΣΣY EPMAIoY.

Rev. Throned Zeus.

Kharōṣṭhī legend, *Maharajasa mahatasa Heramayasa.*

B. M. Catal. p. 65; Von Sallet, p. 117). The correct reading of the Greek legend *stērossu* as an adjective in the genitive, the equivalent of *mahatasa*, is due to Mr. Rapson, in *J. R. A. S.* for 1897, p. 320.

II. Hermæus and Kadphises I.

Obv. As above, with same legend *stērossu.*

Rev. Herakles, standing, facing, diademed, holds in r. hand, club; in l., lion's skin. Kharōṣṭhī legend, *Kujula Kasasa Kuṣana yavugasa dhramaṭhidasa.*

(*B. M. Catal.*, p. 120; Von Sallet, p, 118.)

III. Kadphises I.

Obv. Bust r., as in I and II.

Greek legend KoPoNA (or similar word, probably intended as an equivalent for Kuṣaṇa—the letters vary) KoZoYAo (or KoZoYAA) KAΔΦIΣoY.

Rev. Device and Kharōṣṭhī legend as in II. (B. M. Catal. p. 122; Von Sallet, p. 179).

IV. Kadaphes.

Obv. Head of the king r. diad. (closely resembling that of Augustus in the later years of his life). Greek legend XoPANΣY ZAooY KoZoAA KAΔAΦEΣ.

Rev. *Khuṣanasa yauasa kuyula kaphsasa sacadhramaṭhidasa* in Kharōṣṭhī. King seated on chair. (B. M. Catal. p. 123; Von Sallet, p. 180).

The above legends clearly show that the king Kozoula Kadphises (No. III) was a Kuṣaṇa chieftain, who reigned at first as colleague

of Hermæus, with the titles *dhramaṭhidasa*, equivalent to δικαίου, and *yavugasa* (reading not quite certain), of unknown meaning.

I take *kasasa* in Nos. II and III as a genitive proper name, the equivalent of the Greek ΚΑΔΦΙΣΟΥ, that is to say, Kadphises in the genitive case. The nominative case of the name in the Prākrit should therefore apparently be Kasa, = Kadphises.

The meaning of *kozoulo (kozoula)* in Greek, equivalent to *kujula* (No. II and III) and *kuyula* (No. IV), is not yet ascertained. But it seems impossible to doubt that the Greek *kozoulo*, *kozoula*, or *kozola*, (No. IV), and the Prākrit *kujula* (Nos. II and III), and *kuyula* (No. IV) are all different forms of the same word. If Kadphises I. (No. III) is distinct from Kadaphes (No. IV) that word must be an epithet or title rather than a proper name. But I have a strong suspicion that Kadphises I. and Kadaphes were one and the same person, and that the epithet *yavugasa* of No. II is only a fuller form of the *yauasa* (=ΖΑΟΟΥ) of No. IV.

The king's name (in the genitive) is in the Prākrit :—

Kujula Kasasa — Nos. II and III.
Kuyula Kaphsasa — No. IV.
—— la Kaüsa — new coins A and B.

I propose to treat all these forms, which should be in the nominative respectively Kasa, Kaphsa, and Kaü (?) as variants of a simple name, written in Greek as Kadphises or Kadaphes. Cunningham also identified Kadaphes with Kadphises. "Kozola-Kadaphes I take," he observes, "to be only a variant spelling of the same king's name, on the issue of a different mint. The head seems to be imitated from the coins of Augustus, his contemporary." (*Num. Chron.* for 1892, p. 46.)

KUṢAṆA.

VI. KADAPHES.

Buddha Type.

Thin copper or bronze coin; diam. ·62; wt. 24 gr. Obtained on the Pūñc (Punch) border of the Hazāra District. [RAWLINS.]

Obv. King, or god, standing, wearing diadem and fillet, holding spear upright in l. hand; r. arm extended. Peculiar mon. in l. field behind figure. Greek legend, of which only ΧΟ is legible, probably part of ΧΟΡΑΝΣΥ.

Rev. Seated figure of Buddha, cross-legged; r. hand raised, holding ? ; l. hand on hip. A triangle (? delta) under elbow of r. arm. Kharōṣṭhī legend all round margin; the only characters plainly legible being *kadaça* below the figure. The *ka* is certain; the *da* may possibly be *na*; and the *ça*, having a loop at foot, may be read as *çu*.

This interesting coin is closely related to, though materially

different from, the B coin of the Buddha type, of Kadaphes recently described by me.[1]

That coin had the obverse device of Çiva and the bull. The coin now published has a figure standing to r., and no bull. The fragmentary Greek legend XO induces me to ascribe the coin to Kadaphes, who transliterated *khuṣanasa* by XOPANΣY. I have already intimated that Kadaphes and Kadphises I. may prove to be the same person. I regret that I am unable to offer any interpretation of the imperfect Kharōṣṭhi legend.

KUṢAṆA.

VII. HUVIṢKA.

Brass, or very pale bronze. Diameter ·65. Weight 58 grs. Collected in Hazāra District. [RAWLINS].

Obv. King, seated on throne, looking r.

Three-pronged mon. to l. The plethoric figure of the king recalls the coins of Kadphises II. (*B. M. Catal.*, Pl. XXV, 6, 7).

Greek legend on l., O(?)OO; on r., ·OK(?)AH(?).

The coin has been worn as an ornament, and a hole above the king's head has damaged one or two letters. There are certainly two Os to l., and traces of a third. On the r., the first legible character is certainly O, and the third is A. The second and fourth are doubtful.

Rev. Two figures, standing, facing each other, the head of that to r. having been punched out. Both are clad alike in coats reaching to the knee. The figure to r. wears a sword.

Greek legend, beginning from r. top, is ·AΓO OANAΔAO, which should probably be read [BIZ]AΓO OANAΔAO. The second name is certain. The Δ is the fifth form, and the N the third form in Cunningham's table of the Indo-Scythic Greek Alphabet (*Num. Chron.* for 1892, Pl. X). The letters AΓO are also certain on the original coin.

This is a very peculiar piece. The effigy of BIZAΓO (Viçākha, a son and impersonation of Skanda) has hitherto been known only on coins of Huviṣka, associated with Skanda Kumāra (ΣKANΔO KOMAPO); and with Mahāsēna (MAAΣHNO). (*B. M. Catal.*, p. LXVI, 149, 150; Pl. XXXVIII, 22–24).

The name OANAΔAO is new. The closely related form OANINΔA (or OANINΔO) is found on some rare coins of Huviṣka associated with a figure of the Goddess Nike.

OANAΔAO may possibly be only a variant of OANINΔO, but is more probably a male deity, the star Vanaṅt. The effigy on the new

[1] "Num. Notes and Novelties, No. II" in No. 4 of Part I of this *Journal* for 1897.

coin seems to be male, rather than female, and there is no *iota* in the name. I suggest this identification with reference to Dr. Stein's remarks on OANINΔA, which are as follows :—

"With Verethraghna we may connect most appropriately the winged Goddess, who appears in the distinct type of a Nike holding wreath and trophy-stand on some rare gold coins of Ooerki (see No. VIII ; Cat. p. 147). Her name, which, with a slight variation, is written both OANINΔA and OANINΔO, induces me, in conjunction with the very characteristic type, to identify her with the female genius, whose name *vanaiñti uparatâṭ* 'victorious superiority' is invariably coupled in all formulas and invocations of the Avesta with that of *Verethraghna* (comp., *e.g.*, Yaçna I. 6, Vispered I, 6, Yasht XIV, 0).

We prefer this explanation all the more to the hitherto accepted theory, which identified OANINΔA with the star Vanañt (a male deity !), as it disposes effectually with [*sic*] the two difficulties involved by the latter ; both the female representation of OANINΔA and the Iota of the name are now easily accounted for, the former by the feminine gender of *vanaiñti* (uparatâṭ), and the latter by the well-known phonetic influence of epenthetic *i*." [1]

Inasmuch as the deity BIZAΓO is found only on coins of Huviṣka, and the king's effigy is more like that of Huviṣka then that of Kaniṣka, I am of opinion that this coin with the effigies of BIZAΓO and OANAΔAO should be ascribed to Huviṣka.

UNKNOWN DYNASTY (? of Odumbara.)

VIII. Bhānumitra.

Moderately thick die-struck silver (? base) coin. Diam. ·75. Wt. 72 gr. [Talbot.]

Obv. Male figure standing to l., wearing hat and tunic ; l. hand on hip, r. arm extended across spear. Remains of legend outside spear. Behind figure, a snake on end.

Rev. A small elephant, with rider, in upper l. field, proceeding to l.

Legend in early Brāhmī characters श्रीभानुमित्रस, *Çrī-Bhānumitrasa.* The word *Çrī* is faint, to the l. of the rider's head, but clearly visible on the original coin. The upper part of the *m* is separated from the lower.

The reading of the reverse legend appears to be certain. The characters seem not to be earlier than B. C. 100 or later than A. D. 100.

This coin belongs to a group which has been described by Cunningham in association with the ancient coins of Odumbara or Kāngra.

The coins described by him are those of :—

Rāja Mahādēva	...	C. Anc. I. p. 68,	Pl. IV, 5.
Rāja Rudra Varma	...	*ibid.* „	Pl. IV, 6.
Rāja Aja Mitra	...	„ p. 69,	Pl. IV, 7.

1 "Zoroastrian Deities on Indo-Scythian Coins," Stein (*Oriental and Babylonian Record*, August, 1887).

Rāja Mahi Mitra	...	*ibid.*	p. 69,	Pl. IV, 8, 9.
Rāja ? Dhara	...	„	„	Pl. IV, 10.
Rāja Bhānu Mitra	...	„	p. 70,	Pl. IV, 12.
Ditto do.	...	„	„	Pl IV, 13.

But none of Cunningham's coins agrees exactly with Mr. Talbot's. The male figure device (which Cunningham calls reverse) of his figure 10 is identical with that of the piece now published, but the elephant side of Cunningham's coin had the legend in Kharōṣṭhī, not in Brāhmī characters.

Cunningham's fig. 12 depicts a coin which must, I think, be attributed to the same king as Mr. Talbot's coin. It is thus described:—

"Plate IV, Fig. 12. Æ. 0·55, weight 32 grains. Author.
Obv.—Elephant to l. Arian legend, *Rajna Bhânu Mitasa.*
Rev.—Bodhi tree and two Symbols, snake below. Indian legend, [*Rajna*] *Bhânu Mitasa.*"

The combination of the snake and elephant connects it with Mr. Talbot's coin.

But I am doubtful as to the attribution of Cunningham's figure 13, which is thus described:—

"Plate IV., Fig. 13. Æ. 0·4. Weight 16 grains. Author.
Obv.—Symbols as on reverse of figure 12. Indian legend *Bhânu Mitasa.*
Rev.—Rayed disc of Sun (*Bhânu*) above a Buddhist railing."

So far as I can see, the symbols on fig. 13 are not exactly the same as those on the reverse of figure 12.

In fact, the coin depicted in Plate IV, 13, is a duplicate of the small coin of Bhānumitra depicted in Plate VII, 9, among the Pañcāla or Ahichatra coins. The Mitra coins do not invariably exhibit the characteristic incuse square.

When describing a small Bull and Bodhi-tree coin of [A]gi Mitra with incuse, Cunningham (Pl. VII, 16, page 83) observes that "this coin may, perhaps, belong to the Panjâb."

Mr. L. White King possesses two minute coins of Bhadra Ghōṣa. One, of which I have a duplicate, is like Cunningham's Pl. VII, 11, with incuse distinct. The other has no distinct incuse.

The small coin of Bhānumitra figured in *J. A. S. B.* Pt. I for 1880 (Vol. XLIX), Pl. III, 8, shows the incuse square distinctly, and agrees in this respect with the ordinary Ahichatra coins. That piece was found at Ahichatra. Otherwise it agrees with Cunningham's Pl. IV, 13, and VII, 9, neither of which has any distinct incuse square.

Cunningham's treatment of the various Mitra coins of Ayōdhyā, Ahichatra, and the Panjab leaves much to be desired.

The Ahichatra coins were very fully described by Messrs. Rivett-Carnac and Carlleyle in *J. A. S. B.*, Vol. XLIX, for 1880, Pt. I. pp. 27, 87, 138, Plates III, VII, VIII, IX, XVI, XVII.

The relations between the various groups of Mitra coins are extremely obscure.

The Lahore Museum (*Catal.*, Part III, p. 126) possesses three specimens of Bhānumitra's coinage. No. 1, apparently a copper coin, weight 15 grains, and diam. ·53. The type seems to be the same as that of Mr. Talbot's coin. No. 2, weight 35, diam. ·50, resembles Cunningham's Pl. IV, 12. No. 3, weight 42, diam. ·6, seems to be a slight variety of No. 2.

The Indian Museum seems to possess no coins of Bhānumitra.

IX. Tōramāṇa.

Copper. Diam. ·65. Wt. 55 gr. Bought from Mr. Rodgers, who obtained the coin at Hōshyārpur in the lower hills of the Jālandhar District, Panjab. [V. A. Smith.]

Obv. King standing to front, r. arm bent, and probably holding arrow or sword; body bent at waist; l. hand grasping by middle bow with string turned outwards. Obscure, illegible characters under king's arm.

Rev. Sun in upper field, Below, तोर, *Tōra*, in large bold characters.

Dotted circle.

This coin is a variety of the hitherto unique coin belonging to Mr. Theobald, which was published by Cunningham in *Num. Chron.* for 1894, p. 280, Pl. IX. (VII), fig. 17, and again by me in *J. A. S. B.*, Vol. LXIII, Part I, p. 198, with woodcut. The coin first published had the string of the bow turned inwards.

X. White Hun.

Copper or bronze, rather thick; diam. ·65; weight 49 gr. [Rawlins].

Obv.—Bust to r. Faint legend in small apparently Brāhmī characters in front of face, पल—*Pala*—?

Rev.—Device obscure; it seems to me intended for a cock standing to l., with tail raised. Dotted circle.

This coin clearly belongs to the White Hun group, but I cannot further assign it.

XI. Unkown.

Base metal. Diam. ·55. Wt. 43 gr. From Rāwalpindī. [V. A. Smith].

Obv.—Concave, with a peculiar wheel-like device.

Rev. Convex blank.

I cannot guess what this piece is, and am not certain that it is a coin.

It seems to belong to the class noticed by Thomas in the following words :—

"In this instance, the square die is driven home upon one surface so as to give the coin a concavo-convex form, while the opposite face remains blank. The symbol within the square has the appearance of a rude quatrefoil. These coins are, as far as I know, unpublished ; I have never met with any in the entire course of my own somewhat comprehensive search after local antiquities, nor am I aware from what section of the country the examples I quote were obtained ; they now form part of the late Lord Auckland's collection in the British Museum. They are composed of silver considerably alloyed, and weigh from thirty-five up to forty-one grains." (*Prinsep's Essays*, Vol. I, 213).

The Later Mughals (1707–1803).—*By* William Irvine, *Bengal Civil Service* (*Retired*).

[Read March, 1898.]

The following article is in continuation of that appearing on pp. 136–212 of the *Journal* for 1896, Vol. LXV Part I.

Table of Contents.

Chapter IV.—Farrukhsiyar.

Section 1. The march from Āgrah to Dihlī.
2. ʻAbd-ullāh Khān at Dihlī.
3. Death of Ẓū-l-fiqār Khān.
4. Death of Jahāndār Shāh.
5. Procession into Dihlī.
6. New officials and new appointments, Court appointments, Provincial Governments. The Dakhin.
7. Biography of Muḥammad Amīn Khān.
8. Do. of Khān Daurān.
9. Do. of Ghālib Jang.
10. Do. of Mīr Jumlah.
11. Do. of Niẓāmu-l-Mulk.

CHAPTER IV.

Farrukhsiyar.

1. The march from Āgrah to Dihlī.

In the confusion and the darkness the Jāṭs plundered impartially the baggage of both armies. No fitting resting-place for the prince could be found, nothing but a dirty screen, all black from the smoke of cooking, and a small wooden platform. On this latter Farrukhsiyar seated himself and received the homage of his officers. It was not till three days afterwards that Sa'd-ullāh Khān (son of 'Ināyat-ullāh Khān), who had been Jahāndār Shāh's Lord Steward, produced the late sovereign's duplicate set of tents, which owing to their erection within a

walled garden, had escaped the plunderers. These were put up for Farrukhsiyar on the site of Jahāndār Shāh's encampment.[1]

Having spent the night of the battle (14th Ẓū-l-Ḥijjah, 11th January, 1713), in the small tent erected on the field, the next morning, after a formal enthronement, Farrukhsiyar offered up his thanksgiving at the shrine of Shāh Mushtāq, and then marched one and a half kōs to his camp. The Tūrānī leaders, Cīn Qilīc Khān and Muḥammad Amīn Khān, Cīn, with many others who had served in the army of Jahāndār Shāh, tendered their submission. Sharī'at-ullāh Khān ('Ubaid-ullāh) was also presented by Sayyid 'Abd-ullāh Khān. Written orders were issued to Asad Khān and Muḥammad Yār Khān at Dihlī, and to many other ṣūbadārs, enjoining them to seize the fugitive Jahāndār Shāh wherever he might be found. At the end of the day His Majesty paid a visit to Ḥusain 'Alī Khān who was confined to his tents by his wounds. After the battle was over, he had been found about midnight lying naked and insensible under a heap of the slain. When informed of the victory, new life was breathed into him. The following day, the 15th (12th January), the emperor attended at the large mosque attached to Akbar's tomb at Bihishtābād Sikandra, and there heard the *Khuṭbah* read in his own name. More nobles and leaders now presented themselves. On this date 'Abd-ullāh Khān brought in as a prisoner A'azzu-d-dīn, who had been found hiding in the underground chambers of the mansion at Āgrah known as Dārā Shukōh's.[2] Public rumour asserted that Jahāndār Shāh and Ẓū-l-fiqār Khān had gone to Dihlī; the latter had been seen at Mathurā on the way to that place.[3]

On the 17th (14th January), a move was made to the neighbourhood of Bāgh Nūr Manzil, also known as Bāgh Dahrah.[4] The stream of officers lately serving under Jahāndār Shāh continued to flow into the camp. As there was still great uncertainty about the future movements of Jahāndār Shāh, and a renewal of the struggle by Ẓū-l-fiqār Khān was feared, it was thought advisable to take steps to secure possession of the capital as quickly as possible. 'Abd-ullāh Khān

1 Wārid, 148*b*.

2 Yaḥyā Khān, 121 *a*, says that A'azzu-d-dīn and his wife were captured in a grove near Āgrah, and that Farrukhsiyar ordered them to be kept prisoners. Kāin Rāj's story, 52 *a*, is that they were found in a milk-seller's house.

3 Kāmwar Khān, 126, Ijād, 100 *b*, Wārid, 148 *a*, Khāfī Khān, II, 724, 727.

4 Of this grove the only thing now left is a large well, which from its size is known as the well of the 52 water-bags *(Bāvan lāo ki kuā)*—*Tārikh-i-Āgrah*, Ḥusainī press, Fatḥgaṛh, p. 28. The site is three miles *south* of the fort, it is now within the cantonments, and is called Khawāspurah (private letter from Mirzā Wiqār 'Alī Bēg, dated 20th February, 1893). The epithet Nūr Manzil was given with reference to the Emperor Jahāngīr's name, Nūru-d-dīn Muḥammad, *Maāṣiru-l-umarā*, III, 79.

was therefore invested with the usual dress of honour and despatched on this day (14th January, 1713), upon that service. With him went Cīn Qilīc Khān, Muḥammad Amīn Khān, Cīn, Ḥāmid Khān, Jān Niṣār Khān, Khwājam Qulī Khān, Luṭf-ullāh Khān, Ṣādiq, Turktāz Khān, and others. His orders were to attach all the property of the men belonging to the other side. An imperial rescript was also sent to Asad Khān by the hand of Ikhlāṣ Khān. It was then Farrukhsiyar's intention to follow as speedily as possible with the rest of his troops.[1]

On the 18th (15th January, 1713), another visit was paid to Ḥusain 'Alī Khān. The 19th was passed at the Tāj, where the tombs of Shāhjahān and his queen, Mumtāz-i-Maḥal, were visited. The Government of Akbarābād was confirmed to Sayyid Amīr Khān, Ṭhaṭhawī, or Sindhī, (grandson of Qāsim Khān, Namakīn).[2] The jizyah, or poll-tax, was abolished after it had been levied for thirty-four years. On the 20th submissive letters were received from Asad Khān at Dihlī, reporting the imprisonment of Jahāndār Shāh and the restraint placed on Ẓū-l-fiqār Khān. As Farrukhsiyar could not trust Asad Khān, it was decided to await full reports from 'Abd-ullāh Khān before any further action was taken. On the 22nd the emperor attended the public prayers at the Great Mosque near the *Cauk*, or market-place, in the city of Āgrah, gold and silver coins being scattered on the way. The next day 'Abd-ullāh Khān sent the good news from Dihlī that Jahāndār Shāh had been made a prisoner and Ẓū-l-fiqār Khān dissuaded from continuing his resistance. As there was no longer the same pressing necessity for haste, re-assuring letters were sent to Asad Khān, and a leisurely advance to Dihlī was ordered by the usual stages.[3]

On the 25th (22nd January, 1713), a start was made for Dihlī, the first camp being near Sikandrah. The other marches were, 27th, Sarāe Godrayah, 1st Muḥarram, Irādatnagar, 3rd, a place near Sarāe 'Aẓīmābād, between Mathurā (Islāmābād) and Bindrāban, 5th, Siyāl, 6th Shērgaṛh, 8th, Shāhpur, 9th, Sulṭānpur, 11th, near Fatḥpur, 12th, near Qabūlpur, 13th, Isma'īlpur, 15th (10th February, 1713), a grove in Khiẓrābād, five miles south of Dihlī city.[4]

[1] Mīrzā Muḥammad, 150, 151, Kāmwar Khān, 127, Ijād, 104 *b*, Khāfī Khān, II, 727.

[2] For this man, see Blochmann, *Āīn*, 470, and *Ma'āṣiru-l-umarā*, III, 74. The rock-salt plates and bottles from which he got his nickname are described in Ānand Rām's *Mirātu-l-iṣṭilāḥ*. For Amīr Khān himself, see *M-ul-U*, I, 303.

[3] For abolition of *Jizyah*, see B. M. No. 1690, fol. 163.

[4] Kāmwar Khān, 127, 128, Ijād, 105 *a*. Khāfī Khān, II, 728 and *Ma'āṣir*, I, 318, say the army arrived on the 14th Muḥarram at Bārahpulah, which is 1½ miles nearer the city (Carr Stephen, plate 1). Sarāe Godrayah, Irādatnagar and Shērgaṛh, I have not traced. Mathurā and Bindrāban are well known. Siyāl (Seyee) and

2. 'Abd-ullāh Khān at Dihlī.

We now return to Dihlī. The first news of Jahāndār Shāh's defeat at Āgrah was received at Dihlī after midday on the 15th Ẕū-l-Ḥijjah (12th January, 1713). We have already described the subsequent arrival there of Ẕū-l-fiqār Khān and Jahāndār Shāh, and the measures adopted by Asad Khān. Sayyid 'Abd-ullāh Khān, who started from Āgrah on the 17th arrived at Bārapula near Dihlī on the 25th Ẕū-l-Ḥijjah. The principal men of the city came out to pay their respects,[1] and on the same day Ẕū-l-fiqār Khān, to whom Ikhlāṣ Khān had been sent, rode out to the camp. His interview with the new wazir lasted over an hour. The Sayyids never doubted for a moment that Asad Khān and his son, as soon as they presented themselves, would be admitted to favour and high office. Thus they thought it wisest for their own future benefit, to put the two men under an obligation by acting as their introducers. Sayyid 'Abd-ullāh Khān promised his predecessor that, if he would entrust himself to his and his brother's care, they would arrange that he and his father should not only be presented to the new emperor, but that not a hair of their heads should be injured.[2] Visitors returning from the Nawāb's camp met at the Turkmān gate of the city[3] the retinue of Mahābat Khān, son of Mun'im Khān, who had just been released from prison along with Jahāndār Shāh's other prisoners. Amīnu-d-dīn Khān, who was one of them, found his way to Mathurā and was presented there to Farrukhsiyar on the 3rd Muḥarram (29th January).[4]

On the 26th Ẕū-l-Ḥijjah, 'Abd-ullāh Khān entered the city and occupied the mansion known as Ja'far Khan's.[5] He busied himself in restoring order in the capital and the rest of the country. Khwāja Ḥusain (Khān Daurān), Ḥifẓ-ullāh Khān (son of Murtaẓā Khān), Murīd Khān and other partisans of the late emperor were seized and

Shāhpur are on Sheet No. 50, Sulṭānpur, Fatḥpur (F. Biloc, Qabūlpur, and Isma'īlpur on Sheet No. 49 of the Indian Atlas.

[1] Among others Mīrzā Muḥammad, the historian, with his brother and a cousin, was presented to the Nawāb by Luṭf-ullāh Khān Ṣādiq. Bārahpulah is 3¾ miles south of the Dihlī gate of the modern city (Carr Stephen, Plate 1 and p. 209).

[2] Yaḥyā *Khān, 121b, calls the overtures made by Sayyid 'Abd-ullāh Khān to Asad Khān his "deceit" *(farēb)*.

[3] This gate is on the south side of the city, having the Dihlī gate between it and the river. See Constable's "Hand Atlas," Plate 47, and Carr Stephen, 244.

[4] Mīrzā Muḥammad, 153, 157, Kāmwar Khān, 129, Yār Muḥammad, 26, Khāfī Khān, II, 732, *M.-ul-u.*, I, 317.

[5] It had belonged to Kokaltāsh Khān and was sometimes called 'Alī Mardān Khān's. A'ẓam Shāh had owned it in 'Ālamgīr's reign—(B.M. 1690, fol. 162a). It was afterwards granted to 'Abd-ullāh Khān.

their property confiscated. The same course was adopted with the estate of the late Kokaltāsh Khān ('Alī Murād). Sabhā Cand, Ẓū-l-fiqār Khan's chief man of business, who had been promoted by him to the office of *dīwān* of the Khāliṣah, or Imperial Revenue Office, with the title of Rājah, was summoned by 'Abd-ullāh Khān. Finding that this man was sent for, Ẓū-l-fiqār Khān began to fear for himself, and he told Sabhā Cand not to obey the order. 'Abd-ullāh Khān sent re-assuring messages and advised the ex-wazir not to interfere. Ẓū-l-fiqār Khān was not satisfied, until in a few days *farmāns* arrived, addressed to himself and his father, promising them the new emperor's favour. Some of these letters went so far as to promise his restoration to the office of wazir. As there was no other way out of the difficulty, Sabhā Cand was now sent in charge of Dāwar Dād Khān to Sayyid 'Abd-ullāh Khān. Sabhā Cand was put into prison and his house confiscated.[1]

3. Death of Ẓū-l-fiqār Khān.

Although one month had barely elapsed since Farrukhsiyar had won an empire almost entirely by the exertions of the two Sayyid brothers, a party adverse to them had already been formed in the imperial camp. At its head was 'Ubaid-ullāh, Sharī'at-ullāh Khān,[2] a Tūrānī, who when *qāẓī* of Ḍhākah (Dacca) had acquired great influence over Farrukhsiyar. Allied with him were other personal friends and dependents of the new emperor, the principal man being Khwāja 'Āṣim (Ashraf Khān),[3] a native of Āgrah. Sharī'at-ullāh Khān, although possessing little capacity for high office, was a bold ambitious man, whose chief object was to clear his own road to power by destroying as many as possible of the old nobility, and sowing in Farrukhsiyar's heart the seeds of suspicion against the Sayyids, whom he hoped soon to supplant.[4]

When it was known in Farrukhsiyar's entourage that Ẓū-l-fiqār Khān had visited 'Abd-ullāh Khān and that some kind of friendly proposals had been interchanged, it was resolved to interfere at once.[5] The

[1] Mīrzā Muḥammad, 158.

[2] Afterwards Mīr Jumlah. To give him a status in the court he had been made *dārōghα* of the pages (Khawāṣṣ), on the 20th Ẓū-l-Ḥijjah (17th January, 1713) and the title of 'Ibād-ullāh Khān was conferred on the 26th of that month.

[3] Afterwards Ṣamṣāmu-d-daulah, Khān Daurān, who was made *dārōghα* of the Audience Hall on the 1st Muḥarram (27th January, 1713).

[4] Mīrzā Muḥammad, 158, 159.

[5] Yaḥyā Khān, 121b, makes out that Farrukhsiyar asked the Sayyids for advice as to the conduct to be pursued towards Jahāndār Shāh, Asad Khān, and Ẓū-l-fiqār Khān. 'Abd-ullāh Khān, Ḥusain Alī Khān and Lāchīn Bēg held that on no

man selected as their envoy was one Muḥammad Ja'far, who had long been steward to Farrukhsiyar and had lately been raised to the title of Taqarrub Khān. As he was a native of Irān, it was thought that he would be more trusted than any one else by Asad Khān and Ẓū-l-fiqār Khān, who were also from that country. Taqarrub Khān swore the most solemn oaths on the *qurān* that no harm should happen to Asad Khān or his son. He hinted to them that it was dangerous to accept an introduction through the Sayyid brothers, as in secret Farrukhsiyar was already displeased with them, and was not likely to turn a gracious ear to any representation from them. Persuaded by these arguments, Asad Khān proposed that he and Ẓū-l-fiqār Khān should set out together. His son preferred that, in the first instance, Asad Khān should go alone, that they might see what sort of fate was in store for them. Asad Khān would not listen to any such proposal. He was convinced that, as their services could not be dispensed with, no harm could come to them. Finally on the 15th Muḥarram the two nobles accompanied Taqarrub Khān to the camp at Khiẓrābād and passed the night in their own tents, it being arranged that they should be received in the morning. Their too ready acquiescence bears out the truth of the proverb, "When Death arrives, the physician becomes a simpleton."[1]

We are told by Wārid, I know not with what amount of truth, that after Ẓū-l-fiqār Khān's death the hand which Taqarrub Khān had employed in taking the false oath on the *qurān* began at once to wither. He could not move it, and it grew continually worse. He lived on asses' milk, he tried every remedy, nothing was of the least use. Thus the hand remained a witness to his false oath until three years afterwards his end came.[2]

On the 16th Muḥarram the presentation of Asad Khān and his son took place. Ẓū-l-fiqar Khān, as he entered the imperial enclosure, felt a presentiment of his impending doom. He said to his father that he would withdraw and greet the Emperor the next day, when on his march into the city. Asad Khān lost his temper and gave a sharp answer. Ẓū-l-fiqār Khān was silenced, and they entered the enclosure

account could they be allowed to live. Thereupon Farrukhsiyar decided that Asad Khān was innocent; but they were at liberty to kill the other two.

1 Yaḥyā Khān, 121b, *cūn qaẓā āyad, ṭabīb ablah shavad*. Mīrzā Muḥammad, 159, Kāmwar Khān, 129, Wārid, 113, Khāfī Khān, II, 732, 733.

2 T. Kh. died on the 9th Rabī' II, 1128, 1st April, 1716, *Tārīkh-i-Muḥammadī*. Mīrzā Mḥd., 261, says he died of *diqq* (hectic fever, consumption, atrophy), of which he had been seriously ill for one year. He left sons, one of whom, Ṭāhir Khān, was on the 7th Jumādī II, 1128 H. created Taqarrub Khān, see Kāmwar Khān, 163, 164.

P 20737

together.[1] Asad Khān went into the Justice Hall and sat down. His presence was announced to the Emperor. Farrukhsiyar came from the Chaplet tent (*tasbīḥ-khāna*) and Asad Khān rose, made his bow, and pronounced his salutation. The emperor advanced quickly, embraced him, took his two hands, and seated him close to himself. Many flattering remarks were pronounced and robes and jewels were brought, with which he was then and there invested. Asad Khān now said, "I have brought a culprit with me, may I hope for the pardon of his offences?" The Emperor replied, "Brother, let him be brought in." Ẓū-l-fiqār Khān came in, unarmed, his two hands tied together, and stood before the sovereign. Farrukhsiyar, making a gesture of repugnance at seeing his hands tied, ordered them in an agitated voice to be untied. The Khan was then told to approach. He came and fell at the emperor's feet, but he was raised up and embraced and kindly spoken to. A robe of honour and jewels were brought for him. Farrukhsiyar then, addressing Asad Khān, said that he was just on the point of starting for a visit to the shrine of Niẓāmu-d-dīn Auliyā,[2] he (Asad Khān) had better go home and "Brother," that is, Ẓū-l-fiqār Khān, would remain. Before their arrival, the orders for the visit to the shrine had been given, and the imperial retinue and the men of the *Haft cauki* (personal guard) had all assembled.[3]

Asad Khān returned to his tents and Ẓū-l-fiqār Khān remained in the emperor's camp. Farrukhsiyar rose and went out, saying to Ẓū-l-fiqār Khān, "I am going now; I must get something to eat and see "to my equipage; I will send some food for you, you can eat it here." He then went inside, leaving Ẓū-l-fiqār Khān seated with Khwāja 'Āṣim.[4] In a few moments trays from the imperial table were brought. Fearing that the food might be poisoned, Ẓū-l-fiqār Khān hesitated to eat. Khwāja 'Āṣim, penetrating his thoughts, said: "If his lordship permit, this slave, too, will take a share." Thus reassured Ẓū-l-fiqār

[1] Mīrzā Muḥammad's account of Ẓū-l-fiqār Khān's death was obtained from a friend, whose truthfulness he fully believed in. This gentleman had gone that morning, in Indian fashion, with a *dālī* or basket of fruit and vegetables from his own garden, to be laid at the new emperor's feet. By this means he had been admitted into the Privy Chamber and Justice Hall. Before he could come out, the approach of Asad Khān and his son was announced. When he tried to make his exit, he found that of those inside no one was allowed to leave the place. He was thus a witness of all that happened (M. Mḥd., 161, 162).

[2] Kāmwar Khān, 130, says "the Quṭbu-l-aqṭāb," *i. e.*, the shrine of Khwāja Quṭbu-d-dīn, Bakhtiyārī.

[3] M. Mḥd., 160-2, Ijād 119 *b*, Wārid, 114.

[4] He had just been made Khān Daurān, Bahādur, Ijād, 119 *a*. His titles were afterwards added to, and he became Ṣamṣāmu-d-daulah, Manṣūr Jang.

Khān began to eat. The Khwāja then remarked that to eat food in the tent used as Hall of Justice was not fitting, had they not better move to the screens outside and eat there? It so happened that two canvas screens had been put up in the space before the Hall of Justice, an entrance having been left at one end only. The two nobles came out. As soon as Ẓū-l-fiqār Khān had entered within the screens, and while Khwāja 'Āṣim was still outside them, the tent-pitchers with the greatest expedition brought the screens together and closed the entrance. In an instant about two hundred men, each armed with sword and shield, sprang from their place of concealment and drew up round the screen, shoulder to shoulder, leaving no space whatever between them. When the capture was reported to Farrukhsiyar who was seated in the Chaplet tent (*tasbīḥ-khāna*), 'Ibād-ullāh Khān, *dārōgha* of the Pages,[1] was sent out. Entering between the screens, he said loudly, "His "Majesty asks what reason there was for you to imprison Muḥammad "Kām Bakhsh and inflict injury on his followers. Does it accord with "the rules of loyalty and of submission to a gracious master to act "thus to his sons?" Ẓū-l-fiqār Khān answered:—

"The imprisonment of Kām Bakhsh was by his father's order; "I was 'Ālamgir's servant and Kām Bakhsh, his son. If he had told "me to make my father a prisoner, I should have obeyed."

After each answer 'Ibād-ullāh Khān returned to Farrukhsiyar and came back with a new demand. The questions and answers continued on this wise as follows:

"You were generalissimo and chief adviser of Muḥammad A'ẓam "Shāh. Was it fitting for a general to flee, as you did, and leave his "prince all alone?"

"As long as he was alive, I remained with him; when he was "slain, what right had I to continue a contest in the field."

"What was your quarrel with the martyred Prince, (*i.e.* 'Aẓīmu- "sh-shān, Farrukhsiyar's father)?"

"He did not look on me with favour, thus I was not in a position "to join his side. All the officers of the State took one side or "another. I, too, took a side; nor did I thereby commit any crime."

"Why did you kill Mukhliṣ Khān and Rustam Dil Khān?"

"I had nothing to do with that matter. These things were done "on the advice and by the instigation of Kokaltāsh Khān."

"All the other princes survive: what was Muḥammad Karīm's "offence that you should seize him, bring him to your house, and slay

[1] Afterwards Mīr Jumlah, Mu'aẓẓam Khān, Khān Khānān, Bahādur, Muẓaffar Jang.

"him? Are you not aware that he was our brother, and that his "blood cannot go unavenged?"[1]

Ẓū-l-fiqār Khān, by this time, knew that his death was resolved on, and that any further display of meekness would avail him nothing. He changed his tone and returning taunt for taunt, cursed Farrukhsiyar and said, "If you want to kill me, kill me in any way you like, what is the use of all this talk." Upon this Lāčīn Beg and several Qalmāq slaves[2] fell upon him, threw him to the ground, twisted the strap from a shield round his throat and strangled him. The others stamped upon his chest till the breath left him. But to make quite sure a dagger was plunged into his body several times. Ropes were tied to his feet and he was dragged to the outside of the railing in front of the public Audience Hall. There the body was left exposed. Officials were deputed to confiscate the houses and property of both father and son. Ẓū-l-fiqār Khān's retinue, which was drawn up outside the artillery park at the entrance of the camp, dispersed on hearing what had happened, and the men sought safety wherever they could find it. All this took place at the time of afternoon prayer.[3]

The official statement of the case against Ẓū-l-fiqār Khān, as found in Ījād, whose narrative was corrected weekly by Farrukhsiyar himself, follows the lines of the conversation reproduced above. The misleading letters and messages sent to him through Taqarrub Khān are exultingly referred to as an exhibition of consummate policy and statesmanship.[4]

4. Death of Jahāndār Shāh.

On the same day that saw the end of Ẓū-l-fiqār Khān (16th Muḥarram, 1125 H., 11th Feb., 1713), Saif-ullāh Khān[5] was sent to the citadel with a letter in Farrukhsiyar's own hand-writing addressed to Muḥammad Yār Khān. The *nāẓim*, although sorrowful at Jahāndār Shāh's fate, complied with the order and admitted the messengers. When the group of men entered the prison room, Lāl Kumwār shrieked,

[1] Mīrzā Muḥammad, 163-166.

[2] The name is sometimes given as Ilāčī Bēg and Dilāčīn Bēg. Ījād, 119 *b*, and Kāmwar Khān, 130, say "Nūr Bēg and other Qalmāqs of the brotherhood of Ilāčīn Beg." Khāfī Khān, II, 734, has Lāčīn Bēg (Bahādur Dil Khān) "or as some say, one of the celās." Mḥd. Qāsim, Lāhōrī, 172, describes the man as a servant of Khwāja Quṭbu-d-dīn, son of Maulānā Sharf Ḥusain, Kajkīyah(?) He received the title of Bahādur Dil Khān at the request of Mīr Jumlah.

[3] M. Mḥd. 166, Khāfī Khān, II, 734.

[4] Ījād, 116 *a*, Khizānah-i-'āmirah, 28.

[5] B.M. No. 1690, fol. 162 *a* says Taqarrub Khān (*alias* Nuṣrat Khān), Yaḥyā Bēg, was the messenger.

clasped her lover round the neck, and refused to let go. Violently forcing them apart, the men dragged her down the stairs. Then laying hands on Jahāndār Shāh, they tried to strangle him. As he did not die at once, a Mughal, with his heavy-heeled shoes, kicked him several times in a vulnerable place and finished him off. Word was sent to the *nāẓim* that life was extinct, that an executioner was needed to cut off the head. Muḥammad Yār Khān, who was standing down below, bathed in cold perspiration, answered "What is left for an executioner to do? Cut off his head, and carry it to His Majesty." They cut it off. The body was then thrown into an open litter (*miyāna*) and the head placed on a tray (*khwān*). Half an hour after nightfall, they reached the camp with the lifeless head and trunk and laid them at the entrance to the emperor's tents, alongside the body of Ẓū-l-fiqār Khān. Lāl Kumwār was sent to the settlement of Suhāgpura, where the widows and families of deceased emperors lived in retirement.[1]

5. Procession into Dihlī.

Next morning, the 17th Muḥarram (12th February, 1713), Farrukhsiyar left Khiẓrābād and marching in state into Dihlī took possession of the palace and its citadel. The artillery of all sorts went in front. Behind the guns came the new emperor mounted on an elephant, and at his back sat 'Ibād-ullāh Khān (Mīr Jumlah) waving a peacock fan over his master's head. Largesse was scattered among the crowd as he went by. The head of Jahāndār Shāh was carried on the point of a long bambu held by an executioner seated on an elephant; his body was laid across the back of another elephant. The corpse of Ẓū-l-fiqār Khān, with head and feet bare, was tied by the feet to the tail of a third elephant. These followed about one hundred yards behind the elephant on which the emperor rode. The procession was met by Sayyid 'Abd-ullāh Khān (now Quṭbu-l-mulk) near the city wall, at the inside of the Dihlī gate. The crowd in the streets was immense, a greater had rarely been seen. Some of the spectators were unable to restrain their grief, their eyes filled with tears, lumps formed in their throats, and they muttered to each other, under their breath,

1 Kāmwar Khān, 130, Ijād, 122 *a*, Khāfī Khān, II, 734, Khushḥāl Cand, 395 *a*, Rustam 'Alī, 225 *b*. Suhāgpura (Hamlet of Happy Wives) or the *Bēwa-Khāna* (Widow-house) was one of the establishments (*Kārkhānajāt*) attached to the Court "where in the practice of resignation they pass their lives, receiving rations "and a monthly allowance," *Dastūru-l-'amal*, B. M. No. 6598, fol. 55 *a*. The name, Suhāgpura, may have been due to delicacy for the feelings of the ladies, or it was perhaps given in derision.

"Glory be to God! Yesterday lords over thousands, to-day fallen into this calamity." [1]

The bodies of the unfortunate Jahāndār Shāh and of his wazir were thrown down on the sandy waste before the Dihlī gate of the palace. Asad Khān's family, taking with them nothing but the clothes they had on, were removed in palkis from their house to one known as the *pēshkhāna* of Khān Jahān where they were kept under surveillance; and Taqarrub Khān, the new *Khānsāmān* or Lord Steward, brought in two elephants loaded with the jewels and jewelled vessels from Asad Khān's house, and also sixty-two of his horses. The fallen vicegerent himself had been forced to appear in the triumphal procession into Dihlī, seated in a palki and accompanied by a few men on foot, all that was left of his former grandeur. At the Akbarābādī mosque he was halted, and there he sat in his palki unheeded for four or five hours, until Farrukhsiyar ordered his removal with his women to the office rooms of the Diwān above referred to. Some temporary screens were put up, and there he and his family sought shelter. Food was sent to them at night by Ḥusain 'Alī Khān.[2]

It was not till the 19th (14th February, 1713), that Arslān Khān received orders to bury the bodies of the murdered Jahāndār Shāh and Zū-l-fiqār Khān. The prince was laid in the vault of the emperor Humāyūn's tomb, at the side of other members of the family. Zū-l-fiqār Khān's remains were interred close to the shrine of Shaikh 'Aṭā-ullāh, which is situated at the gateway of the same tomb. Zū-l-fiqār Khān was a little over fifty-nine (lunar) years of age at the time of his death; he left no sons. No memorial was erected over him for several years. At length some of his eunuchs, who had been transferred to Sayyid Ḥusain 'Alī Khān, mentioned this fact to their new master. The Sayyid ordered a tomb to be built, and on a tablet were inscribed the following lines, composed by Asad Khān:—

هاتف شام غریبان با دو چشم خون‌فشان
گفت ابراهیم اسماعیـــل را قربان نمـــود

1 Mīrzā Mḥd., 168, Ijād, 123, Khūshḥāl Cand, 395-*b*. The Dihlī gate is on the south side of the city, it is the one nearest the Jumna. Mīrzā Muḥammad and his brother witnessed the entry into Dihlī from the roof of the Akbarābādī mosque, which is in the Faiz Bāzār, the street running north and south from the Dihlī gate of the city to the Dihlī gate of the fort. (*Āṣāru-ṣ-ṣanādīd*, 70, Carr Stephen, 246, 248). Khushḥāl Cand, also, was one of the onlookers and "into the skirt of this "humble one, too, fell a silver rose, weighing seven māshas."

2 Kāmwar Khān, 131, Ijād, 124-*b*, Khāfī Khān, II, 734, B. M. No. 1690, fol. 162-*b*.

i.e., "A hidden voice, lamenting with blood suffused eyes, said, 'Ibrāhīm made of Ismā'īl a sacrifice'" (1125-H.).[1]

In connection with these lines, Wārid tells a story in praise of Asad Khān's strength of mind and vigour of intellect, even at the extreme age that he had then reached, which, if true, would seem rather to prove his want of common feeling. At the moment that his son's death was announced to him, he hung his head for a little while, and then said to the bystanders, "My thoughts repeatedly recur to "the words 'Ibrāhīm made of 'Ismā'īl a sacrifice.'" As the numerical value of the letters in these words accords with the year of Ẓū-l-fiqār's death, the coincidence, if the words came spontaneously into his mind, was very wonderful. If not, this excogitating of a numerical puzzle was a curious use of the first moments following the news of an eldest son's violent death. As there was no member of the family left to support its name and fame, and Asad Khān now disappears from our history, it will be sufficient to note that he survived until the 25th Jumādī II 1128 H. (15th June, 1716), when he passed away at the great age of eighty-eight lunar years.[2]

Ẓū-l-fiqār Khān had obtained great renown as a soldier in the Dakhin, and there can be no question that he was a man of great experience in matters of state. But during the period that we are treating, commencing with the battle between A'ẓam Shāh and Bahādur Shāh in 1707, his generalship was prudently displayed more in furthering his own interests than in winning battles for the master that he might be serving at the moment. Dānishmand Khān ('Alī) has a passage, taunting him with his conduct in the battle of Jājau, and accusing him of acting on the maxim that discretion is the better part of valour. An anecdotist[3] states that Ẓū-l-fiqār Khān offered the poet and historian a large sum if he would erase this passage from his work, but to 'Alī's credit be it said, the words still stand in the copies which have come down to us.[4]

1 The father's original name was Ibrāhīm and the son's 'Ismā'īl, Ijād, 127-b Wārid, 147-a, Khushḥāl Cand, 395-a.

2 Wārid, 146-b, *Tārīkh-i-Muḥammadī*, year 1128-H., Kāmwar Khān, 165. *Ma'āṣiru-l-umarā*, II, 319, says 94 years; also Khāfī Khān, II, 771, where the year is 1129-H. Kām Rāj makes the age 98 years. An allowance of Rs. 50,000 a year had been given to him by Farrukhsiyar, B. M. Or. 1690, fol., 164a.

3 Anand Rām, Mukhliṣ, "Camanistān," p. 22.

4 *Bahādur-shāh Nāma*, B. M. Or. 24, fol. 37b. "The first to show his back was "Muḥammad Ismā'īl, entitled Ẓū-l-fiqār Khān. To A'ẓam Shāh's face he made "great protestations, but instead of sacrificing his life, he made off at the earliest "moment. Receiving from an arrow a skin wound near the mouth, he cast away "his honour through excessive love of life. If he is abhorrent (*mal'ūn*) to the

The greatest blot on the life of Asad Khān and Ẓū-l-fiqār Khān is, however, the base ingratitude displayed towards Jahāndār Shāh. Even native historians do not defend this act of treachery. Jahāndār Shāh had many claims upon them for favours conferred; and he had placed his life in their hands. If Asad Khān had thought fit to excuse himself from joining any further in the prince's fortunes, he should have left it open for the fugitive to seek some other refuge. But he should not have seized him or delivered him over to his mortal enemy to be killed with indignity. Apart from this harsh and fruitless act, Asad Khān was superior in character to the other nobles of his time. He did little oppression, was long-suffering, full of dignity and of a handsome presence. He was of a correct disposition, which means, we are told, the showing of benevolence and sympathy to the lowly, and of ostentation and hauteur to your equals. His rise was rapid and unchecked, or as it is put, "he threw without intermission double-six "from the dice-box of desire." [1]

6. New Officials and new Appointments.

On the way from Āgrah to Dihlī, and after arrival at Dihlī, many new appointments were made and new titles conferred. Sayyid 'Abdu-llāh Khān (now made Nawāb Quṭbu-l-mulk, Yaminu-d-daulah, Sayyid 'Abd-ullāh Khan, Bahādur, Ẓafar Jang, Sipāh-sālār, Yār-i-wafādār) became chief minister. The *dīwān-i-Khālişah*, or Exchequer Office, was given to Muḥammad Bāqir, Muta'mid Khān, who had been for a time Prince Muḥammad A'ẓam Shāh's lord steward, and then *dīwān*, or comptroller of the household, to Prince Jahān Shāh; the *dīwān-i-tan* went to Luṭf-ullāh Khān, Bahādur, Ṣādiq, who in Bahādur Shāh's reign was agent at Court of Prince Jahān Shāh, and in Jahāndār Shāh's was comptroller (*dīwān*) to that sovereign's eldest son, A'azzu-d-dīn. Sayyid Ḥusain 'Alī Khān, was appointed first Bakhshī with the titles of 'Umdatu-l-mulk, Amīru-l-umarā, Bahādur, Fīrūz Jang, Sipāh-sardār.[2] As the reward for the Tūrānī betrayal of Jahāndār Shāh, the place of second *bakhshī* was conferred on Muḥammad Amīn Khān, Cīn, Bahādur, who now became I'timādu-d-daulah, Nuṣrat Jang. The third bakhshī

"people, his excuse is notorious (*ma'lūm*). He had risen to fame and place in the "Dakhin; from his youth up, his training in valour had been in running after "the traces of the Marathas, a tribe of cats, whose occupation is robbing and "running away. He had never seen a battle between kings; had never met in "battle field with tigers from the forest of valour. In brief, to stand firm in such "violent contests you must be a hero."

[1] *Ma'āşiru-l-umarā*, II, 317, 318.

[2] Shiw Dās, fol. 2, has Manṣūr Jang, which seems a mistake.

was Afrāsyāb Khān, Bahādur, a *Wālāshāhī*, or personal follower of Farrukhsiyar, with whom he had been in Bengal and had there taught him wrestling.[1] The pay-mastership of the Aḥadīs[2] was given to Qamaru-d-dīn Khān, Bahādur, son of the above-named Muḥammad-Amīn Khān. Islām Khān (grandson of the late Islām Khān), formerly *Mīr Ātash* to Bahādur Shāh, who had retired from court, was restored to his rank of 5,000, 3,000 horse, and appointed to be first *Mīr Tozak*, or quarter-master-general.[3] For the period of one month from the victory at Āgrah, Sa'd-ullāh Khān[4] (son of 'Ināyat-ullāh Khān, Kashmīrī) was continued in the office of *Khānsāmān*, or Lord High Steward; but at the camp in Khiẓrābād, this office was transferred to Taqarrub Khān (Muḥammad Ja'far, Shīrāzī), who already held the place of Private secretary.[5]

Some smaller court offices were conferred on Farrukhsiyar's personal favourites. Although these offices were of the second rank, their holders exercised, as we shall soon see, as much if not more power than the nobles who were nominally their superiors. For instance, against the opinion of Mīr Jumlah, who was officially no more than head of the pages and messengers, the chief minister himself found it impossible to act. The office of Confiscations and Escheats (*buyūtāt*ī) was given to Saif-ullāh Khān, Bahādur, a *Wālā-shāhī*; Khwāja 'Āṣim, now created Ṣamṣāmu-d-daulah, Khān Daurān, Bahādur, Manṣūr Jang, was superintendent of the Audience Hall and Bakhshī of the personal

1 Afrāsyāb Khān, Bahādur, Rustam Jang, was Suhrāb, known as Mīrzā Ajmērī son of Garshāsp. He died at Dihlī on the night of the 25th Ramaẓān, 1130 H., 21st August, 1718, *Tārīkh-i-Muḥ*ammadī. His elder brother was the Rashīd Khān sent in 1124 H., 1712, to oust Ja'far Khān, *nāẓim* of Bengal, Gladwin, "Transactions," 96. Mīrzā Ajmērī was of such strength that once he lifted a small gun and its carriage out of the mud on the road from Akbarnagar to Rāj Maḥal, *Akhbār-i-Muḥabbat*, 277.

2 *Aḥadī* (one, single) means a gentleman trooper serving under no chief or noble, but directly under the Emperor.

3 This Islām Khān (d. 1144 H., 1731-2), was one Mīr Aḥmad, first Barkhurdār Khān, then Islām Khān, son of Ṣafī Khān (d. 1105 H., 1693-4), the second son of 'Abdu-ṣ-ṣalām, first Ikhtiṣās Khān, then Islām Khān, Mashhadī, (d. 1057 H., 1647-8), *M.-ul-u.*, I, 162, II, 740.

4 His former titles were Hidāyat-ullāh Khān, and then for a time, after the death of Mun'im Khān, Bahādur Shah's Wazīr, he was Wazārat Khān. We shall speak of this man again presently.

5 Mīrzā Muḥammad, 169, KāmwarKhān, 121, 143, Khāfī Khān, II, 728, Wārid, 149b, Kām Rāj, *'Ibratnāmah*, 53b. Khāfī Khān says the third *bakhshī* was Ghāzīu-d-dīn Khān (Aḥmad Bēg). Yaḥyā Khān, 122*a*, on the contrary, says that this man was made Mīr Ātash. This latter statement is confirmed by Mḥd. Qāsim, Lāhorī, 170, the date being 12th Sha'bān, 1125 H., (2nd September, 1713), *vice* Ẓū-l-fiqār Khān (Ghulām 'Alī Khān).

troops, or *Wālā-shāhī*; 'Ibād-ullāh (Sharī'at-ullāh Khān) created Muta'midu-l-mulk, Mīr Jumlah, Mu'aẓẓam Khān, Khān Khānān, Bahādur, Muẓaffar Jang, held the office of superintendent of the *Khawāṣṣ*, or attendants, and of the *ghusl khāna*, or privy council room. Ghulām 'Alī Khān, a *wālā-shāhī*, received the title of Ẓū-l-fiqār Khān, Bahādur, and the command of the artillery; being soon supplanted, however, (12th Sha'bān 1125 H., 2nd September, 1713), by Ghāziu-d-dīn Khān (Aḥmad Bēg). This latter had already obtained charge of the retinue (*jalau*), *vice* Islām Khān, who had held it in addition to his principal office of *Mīr Tozak*. The command of the *caukī-khāṣṣ*, or bodyguard, was made over to Faiẓ-ullāh Khān, a *wālā-shāhī*. Amīnu-d-dīn Khān, Sambhalī, became head of the *'Arẓ Mukarrar*, or office for the examination and confirmation of appointments. The department of Branding and Mustering (*dāgh-o-tashīḥah*) was given to Sayyid Shujā'at-ullāh Khān, Bārhah, sister's son of Quṭbu-l-mulk, the Wazīr. At first Fidā Khān[1] was retained, as in Bahādur Shāh's and Jahāndār Shāh's time, as *qūr-bēgi*, or head of the armoury; but the place was shortly afterwards transferred to Amīr Khān (Muḥammad Isḥāq)[2] son of the late Amīr Khān; then in a few months he gave way in favour of Khwāja Muẓaffar, Pānīpatī, now created Ẓafar Khān, Bahādur, who was known by the nickname of Ṭurrah-i-bāz.[3] The Ṣadārat-i-kull, or superintendence of charitable and religious grants, was given to Sayyid Afẓal, who had taught Farrukhsiyar to read the *qurān*, with the title of Sayyid Afẓal Khān, Bahādur, Ṣadr Jahān.[4]

The provincial governments were next provided for. Kābul was left in the hands of Nāṣir Khān, Bahādur, Nāṣir Jang Kashmīr was taken from 'Ināyat-ullāh Khān, whose *manṣab* even was cancelled, and

[1] Formerly Tahavvur Khān, then Fidā Khān, son of Ṣalābat Khān, Khwāja Mīr, Khwāfī, (d. early in 1104 H., 1693-4), *M.-ul-u.*, II, 742, 745.

[2] Afterwards 'Umdatu-l-mulk, A. K., assassinated 1159 H., 1746-7.

[3] *Ṭurrah*, waving ringlets, or the hanging end of a turban; *Ṭurrah-i-bāz*, 'a falcon's crest.' Ẓafar Khān and all his men wore their turbans in the same way, with an end sticking out, and from this peculiarity the nickname arose. Khushḥāl Cand, 403*b*, explains that the *Ṭurrah* were of gold and silk brocade (*bādalah*), and were used extensively as ornaments to Ẓafar Khān's equipage. In lot No. 698 in B. Quaritch's catalogue, No. 161, of July 1896, there was a portrait of Rōshanu-d-daulah (*i.e.*, Ẓafar Khān) which I inspected. It showed a rather stout and not very tall man, with a broad and slightly heavy face, white beard and moustache, the latter slightly black still at the corners of the mouth. To the band or ribbon round the centre of the turban was attached an ornament (*sarpec*) and from it hung a long feather, falling backwards and ending in two small points. Perhaps this feather represents the *Ṭurrah-i-bāz*?

[4] Mīrzā Muḥammad, 169.

he was replaced by Sādāt Khān,[1] the new Emperor's father-in-law, to whom permission to govern by deputy was accorded. Zabardast Khān entitled 'Alī Mardān Khān (III), son of Ibrāhim Khān, 'Alī Mardān Khān (II), son of Amīru-l-umarā, 'Alī Mardān Khān (I)[2] died at Lāhōr before he could be removed; he was replaced by 'Abdu-ṣ-ṣamad Khān, Bahādur, (subsequently made Dilēr Jang, after his victories over the Sikhs). Multān was conferred on Quṭbu-l-mulk, the Wazīr, but Shēr Afgan Khān, Bahādur, (brother of Luṭf-ullāh Khān, Ṣādiq), who had been in charge on behalf of Kokaltāsh Khān (' Alī Murād) remained on as the deputy of the new governor). For the preceding fifteen or sixteen years Dihlī had been held by Muḥammad Yār Khān, and he was left undisturbed. Ajmēr was made over to Sayyid Muẓaffar Khān, Bārhah (recently created Sayyid Khān Jahān, Bahādur), maternal uncle of Quṭbu-l-mulk. Shahāmat Khān (son-in-law of ' Ināyat-ullāh Khān, Kashmīrī) who had been governor of Gujarāt in Bahādur Shāh's reign, received the new title of Mubāriz Khān and was confirmed in his old appointment. Rājah Chabelah Rām,[3] a personal adherent of Farrukhsiyar's family and a brave soldier, whose welfare was dear to the heart of the Emperor, was sent at first to Āgrah, his birthplace, but on the pretext that he was unable to cope with Curāman, Jāṭ, he was soon replaced by Ṣamṣāmu-d-daulah, Khān Daurān, also a native of Āgrah. Audh was given to Sarbuland Khān, the Emperor's uncle by marriage, and Allāhābād to Khān Jahān (son of the late Khān Jahān, Bahādur, Kokaltāsh, 'Ālamgīrī). The latter had been recently removed from the Government of Bengal. His titles were now increased to A'azzu-d-daulah, Khān 'Ālam, Bahādur. Shahāmat Khān (Mubāriz Khān) had lately held Mālwah in addition to Gujarāt. Mālwah was now taken from him and given over to Rājah Jai Singh of Āmber. To conciliate the Rājah, he was told that he need not come to Court, but might march straight from his own country to his new government. 'Aẓīmābād Paṭnah (Bihar) was confirmed, as before ' to Ḥusain 'Alī Khān, Amīru-l-umarā; his sister's son, Ghairat Khān, who had been left behind in charge, continuing to act as his deputy. Bengal was conferred on the infant prince, the Emperor's son, Farkhunda Bakht, entitled Jahāngīr Shāh, with the former *dīwān*, Murshid Qulī Khān,

1 Mīr Muḥammad Takkī, Ḥusainī, Māzandarānī, Iṣfahānī, son of Sādāt Khān, wounded on the day of Farrukhsiyar's deposition, in Rabī' 1131 H., February 1719, and died a few days afterwards aged over eighty years—*Tārīkh-i-Muḥammadī*.

2 Mḥd. Khalīl, entitled first Zabardast Khān, then 'Alī Mardān Khān, Zīk, died a little before the 9th Jumādī I, 1125 H., 2nd June, 1713, *Tārīkh-i-Muḥammadī* and Kāmwar Khān. For this family, see *M.-ul-u.*, I, 295-300, II, 795, and III, 155.

3 Chabeli Rām in Mīrzā Muḥammad; sometimes Chabelā Rām in other works.

as his deputy. The latter's titles were increased to Ja'far Khān, Naṣīrī.[1] In a few months' time, when the infant died of small pox, the *ṣūbah* was granted to Mīr Jumlah, with the same deputy. To Orissa, Murshid Qulī Khān (Ja'far Khān) was appointed ṣūbahdār in his own name.[2]

For the six provinces making up the Dakhin special arrangements were made. The supreme control of the whole country was confided to Cīn Qilīc Khān (son of the late Ghāziu-d-dīn Khān, Firūz Jang), who on this occasion was created Niẓāmu-l-mulk, Bahādur, Fatḥ Jang. He was empowered to select the lands to be held in jāgīr for furnishing the pay of himself and his followers, and to suggest the rank (*manṣab*) to be granted to the chief landholders. His headquarters were fixed at Aurangābād. In Burhānpur his deputy was to be Shukr-ullāh Khān, to make room for whom Dāūd Khān, Pannī, was removed as deputy-governor to Aḥmadābād in Gujarāt; in the two Karnātak, Sa'ādat-ullāh Khān; in Barār, 'Iwaẓ Khān, who was married to the late Ghāzīu-d-dīn Khān's sister, and was, therefore, Niẓāmu-l-mulk's uncle by marriage. Bīdar, Bījāpur, and Ḥaidarābād were to remain as before under Amīn Khān (son of Khān Zamān, Bahādur, Fatḥ Jang, deceased), Manṣūr Khān and Yūsuf Khān respectively. Ḥaidar Qulī Khān, Isfarāinī, a protégé of Mīr Jumlah, was sent as *dīwān* of the whole Dakhin, with authority over every department, except those of the Nāẓim, of the report writers, and of the deciding of suits.[3]

The Sayyid brothers are generally accused of grasping all power and office for themselves and friends to the exclusion of everybody else. It is curious to note, after going through the chief appointments, that this accusation should have so little foundation. Besides the two offices which were the price of their services, they received the government of two *ṣūbahs* for themselves and one for an uncle. They seem to have

[1] Mīrzā Muḥammad gives بصیری plainly enough, but generally it is written نصیری *naṣīrī* or *nuṣairī*. *Baṣīrī* means "the prudent," "the circumspect," *naṣīrī*, "the ally," "the helper," and *nuṣairī* "faithful to 'Alī as was Nuṣair," or "one ready to sacrifice his life out of devotion." Anyone of these meanings would be equally appropriate.

[2] Mīrzā Muḥammad, 174.

[3] Mīrzā Muḥammad, 177, Khāfī Khān, II, 740. Biographies of some of the above men will be found as follows. Dāūd Khān, Pannī, d. 1127 H., 1715-16, (*Ma'āṣiru-l-umarā*, II, 63). Sa'ādat-ullah Khān, a Nawāyat (*see* Wilks, I, 242), died 1145 H., 1732-3, (*M-ul-u*, II, 513). 'Iwaẓ Khān, d. 1143 H., 1730-1, (*M-ul-u*, II, 832). Amīn Khān, d. 1137 H., 1724-5, (*M.-ul-u.*, I, 352), fourth son of Shaikh Niẓām, Khān Zamān, d. 1108 H., 1696-7, (*id.* I, 794), captor of Shambhā Jī, Mahrattah. Manṣūr Khān was a Rōz Bahānī.

obtained very little else, while the Emperor's friends and the Tūrānī chiefs obtained the lion's share. A crowd of new men were thus brought on the stage, and it is necessary for the sake of clearness that we should say something about the most prominent of them, their origin and antecedents.

7. I'TIMĀDU-DAULAH MUḤAMMAD AMĪN KHĀN, BAHĀDUR, NUṢRAT JANG.

Muḥammad Amīn Khān was a native of Samarqand in the kingdom of Bukhārā. His grandfather, 'Ālam Shaikh, a learned man and a descendant of the Shaikh Shahābu-d-dīn, Qurai<u>sh</u>ī, Tarmanī, Ṣadīqī, of Sahrward, had two sons, Khwāja 'Ābid and Mīr Bahāu-d-dīn. The elder son came to India and was the father of Ghāzīu-d-dīn Khān, Fīrūz Jang; the second son, Mīr Bahāu-d-dīn, Muḥammad Amīn's father, entered the employ of the ruler of Bukhārā, and was by him executed on suspicion of complicity with his rebellious son. This event happened about the year 1098 H. (1686–7), when Mīr Muḥammad Amīn must have been about twenty-five years of age. He escaped to India and was favourably received by 'Ālamgīr, then in the Dakhin, by whom he was sent to serve with his cousin, Fīrūz Jang. In the forty-second year, 1109–10 H., 1697–8, when 'Ālamgīr was anxious to find in the Tūrānīs a counterpoise to Asad Khān, the Wazīr, and his son, Ẕū-l-fiqār Khān, Muḥammad Amīn Khān was brought to Court and made *ṣadr*, or head of the charitable and religious endowments. In 1115–16 H., 1704-5, and again in 1116–17 H., his rank was raised in reward for military services, and in the very last year of 'Ālamgīr's reign (1118 H.), after defeating the Mahrattahs, he received the special addition of *Cīn Bahādur* to his other titles. Although the Tūrānīs had not shown any great zeal for his rival, A'ẓam Shāh, still Bahādur Shāh did not receive them into the same favour as before. Muḥammad Amīn Khān was sent to Murādābād as *faujdār*; but towards the end of the reign, he was brought back to headquarters, and took a leading part in the campaign against the Sikhs. When Jahāndār Shāh decided to march against Farrukhsiyar, Muḥammad Amīn Khān was recalled from Sahrind. He was present in Jahāndār Shāh's ranks at Āgrah, but as we have related, took no serious part in the fighting. This betrayal was now rewarded by his appointment to be second Bakhshī of the empire. At this time he was about fifty-two years of age, and since the death of Fīrūz Jang in 1122 H., 1710–11, he had become the acknowledged leader of the Tūrānī soldiery, his cousin, Cīn Qilīc Khān (Niẓāmu-l-mulk), son of Fīrūz Jang, being about ten years his junior.[1]

1 *Ma'āṯiru-l-umarā*, I, 346.

8. Ṣamṣāmu-d-daulah, Khān Daurān, Bahādur, Manṣūr Jang.

Khwāja 'Āṣim's ancestors, emigrating from a village in Badakhshān, took up their residence in Āgrah. Some followed the profession of soldiering, others gained reputation as men of learning and holiness, living secluded from the world. They were of the Naqshbandī sect. His father's name was Khwāja Qāsim: and as his birth took place about 1083 H., 1672-3, he was now about forty-two (lunar) years of age. He began life as a trooper of Prince 'Aẓīmu-sh-shān's regiment, and when that prince, at the time of 'Álamgīr's death, left Bengal for Āgrah, Khwāja 'Āṣim remained with Farrukhsiyar in the former province. One author asserts that he had been a play-fellow of Farrukhsiyar's, but as he was at least eleven years older, this can hardly be correct. His intimacy with the prince was founded, however, on his joining him in wrestling, archery, riding, polo playing and other warlike exercises, of which Farrukhsiyar was passionately fond. He soon obtained such great influence with the young prince that the other courtiers complained to 'Aẓīmu-sh-shān. The Khwāja was accordingly sent for to head-quarters at Lāhōr. Soon after this, Bahādur Shāh died and Khwāja 'Āṣim (now become Ashraf Khān) upon the death of his master, 'Aẓīmu-sh-shān, fled to Āgrah. Here Khwāja Ja'far, his elder brother, tried to make him renounce the world and thus save his soul. For a time he stopped at home and occupied himself with Shīrāzī pigeon-fancying and archery. When Farrukhsiyar became next heir to the throne, Khwāja 'Āṣim "felt like a falcon newly moulted." He began to collect some men, but his doings were reported to the governor. Being warned by a disciple of a resolve to seize him, he fled at midnight in the disguise of a faqīr. On reaching Paṭnah, he was introduced by the two Sayyids to the prince, his former intimacy with whom he is said to have concealed. From this point the part he took has already appeared in our history.[1]

Khān Daurān was the perfect type of the Indian courtier, and from this time until his death in 1151 H. 1738, he retained his position at Court, whoever was in power. He is described as a man of smooth plausible speech, with no learning and little knowledge of Persian, prefixing to every sentence the catch word *Mērā ṣāḥib!* (my good sir). To conceal his limited acquaintance with Persian, he used to begin by speaking in elegant Urdū, so that he might charm his hearers at the outset and prevent their noticing his defective scholarship. He used to say that for a man born in India to attempt to speak Persian was to make himself ridiculous by his own act. But he could quote occasional-

1 *M-ul-umarā*, I. 817. *Aḥwālu-l-khawāqīn*, 49*b*, *Tārīkh-i-Muḥammadī* (year 1151 H.)

ly with good effect Persian couplets or proverbs. An elder brother had been formerly in the service of 'Aẓīmu-sh-shān and was killed in the campaign in Bengal against Raḥīm Khān, Afghān. Much of Khān Daurān's prestige may have been derived from his commanding presence. A contemporary tells us that when he walked up the audience hall with a group of followers, his head would be seen towering far above the others. From all accounts he and his brother, Muẓaffar Khān, were boasters of a most extravagant order, while their courage was more than doubtful. At any rate, they rarely put it to the test. Khān Daurān might, indeed, have qualified as a member of the Peace Society, for whenever the subject was broached, he would ask, "What is to be gained by going to war?" He was one of those men, never absent from Eastern courts, who do absolutely nothing, either in war or in peace, as a return for the rank and wealth which have been showered upon them. His hand was in every intrigue, and never without profit to himself. Throughout his career, he was the favourer of the Hindustānī party in the State, the person through whom Jāt or Rājput chiefs put forward any claim they might wish to advance. Especially was this the case with Rājah Jai Singh, for whom as we shall see, Khān Daurān obtained many favours.[1]

9. Ghāzīu-d-dīn Khān, Ghālib Jang, (Aḥmad Bēg).

When Farrukhsiyar first reached 'Aẓīmābād Paṭnah, Shari'atullāh Khān (Mīr Jumlah) and Khwāja 'Aṣim (Khān Daurān) not being present, Aḥmad Bēg became for a time his most active assistant and principal confidant. He was one of the foster brothers of Jahāndār Shāh,[2] but having quarrelled with that prince on account of the preference shown for 'Alī Murād, Kokaltāsh Khān, he sought a refuge in Bengal. When Farrukhsiyar's more particular favourites returned, they supplanted Aḥmad Bēg in the prince's good graces, and from that time he seems to have fallen a good deal into the back ground. Aḥmad Bēg, a man of Tūrānī race,[3] was born about 1076 H. 1665-6. From the scantiness of his beard, he bore the nickname of *Kosah*, or Goatbeard.[4] His further part in history is confined to two occasions, the day of

1 *Ma'āṣiru-l-umarā*, I, 819, Yaḥyā Khān, 119*b*., Āshōb, 73.

2 Yaḥyā Khān, 119*a*, says he was the *nawāsah* (daughter's son) of Qāim Bēg, Shāhjahānī.

3 The *Aḥwālu-l-khawāqīn*, 61*a*, gives him the epithet of *Aẓhtarlab* (?).

4 The epithet is borne out by a portrait that I saw lately at Mr. Quaritch's (one of the drawings mentioned on the cover of his catalogue No. 155, December 1895). Ghālib Jang is shown seated, and is dressed in a pale mauve coat of thin muslin. His beard consists of four or five short, straight hairs.

Farrukhsiyar's deposition, when he fought in the streets on his master's behalf, and again at the time when he took the side of Quṭbu-l-mulk, after the murder of Ḥusain 'Alī Khān. When Muḥammad Shāh pardoned him, it was proposed to take away his title of Ghālib Jang, as it had been granted to a brother of Luṭf-ullāh Khān, Ṣādiq. Ghaziu-d-dīn Khān made loud objection, and claimed that, as both he and the new "Conqueror in War" were present, they should fight it out in single combat, the victor becoming in both senses "*Ghālib-i-jang*." The emperor smiled and left him in undisturbed possession. He died on the 12th Ṣafar, 1139 H., (8th October, 1726), at the age of sixty-three (lunar) years.[1]

10. Mīr Jumlah.

The name of this man, a native of Samarqand in Tūrān, was 'Ubaid-ullāh,[2] son of Mīr Muḥammad Wafā, and he was born about the year 1081 H., 1670-1. Early in life he abandoned his native country and repaired to Hindūstān, where he arrived in the reign of 'Ālamgīr. He obtained in time the post of *Qāẓī* at Jahāngīrnagar Dhākah in *ṣūbah* Bengal, and finally the same office at 'Aẓīmābād Paṭnah in *ṣūbah* Bihar. He seems to have wormed himself into the confidence of Prince 'Aẓīmu-sh-shān, then Governor of Bengal and Bihar, and to have obtained complete control over the mind of his second son, Farrukhsiyar. He was with Prince 'Aẓīmu-sh-shān at Lāhōr, and as we have already stated, was making his way eastwards to Farrukhsiyar when he met and joined that prince at Āgrah. He had secured himself a very favourable reception by his successful negociations with the Tūrānī leaders in Jahāndār Shāh's army. From this time his name will recur frequently in our narrative. His titles were first Sharī'at-ullāh Khān, then 'Ibād-ullāh Khān, Bahādur, Muẓaffar Jang, and finally Muta'midu-l-mulk, Mu'aẓẓam Khān, Khān Khānān, Bahādur, Muẓaffar Jang, Mīr Jumlah, Tarkhānī, Sulṭānī. He is described by one writer as a man who, in spite of his great learning, was blind to the essential meaning of things.[3]

11. Niẓāmu-l-mulk.

Perhaps the most important person in the group of men that rose into the very first rank upon Farrukhsiyar's accession, was Niẓāmu-l-mulk, now a man of nearly forty-three (lunar) years of age, who

[1] *Ma'āṣiru-l-umarā* II, 879, *Tārikh-i-Muḥammadī*., year 1139 H.

[2] The *Ma'āṣiru-l-umarā* has "'Abd-ullāh" and "'Ibād-ullāh." Th commonest form is عبيدالله which may be either 'Abīd-ullāh or 'Ubaid-ullāh.

[3] *Ma'āṣiru-l-umarā*, III, 711, *T-i-Muḥammadī*., year 1144 H., *Aḥwālu-l-khawāqīn*, 61a.

was already a distinguished soldier and provincial governor, even in 'Ālamgīr's reign. Hitherto, however, he had been overshadowed by his father, Ghāzīu-d-dīn Khān, Fīrūz Jang, who had died only two years before this time, and by his cousin, a much older man, Muḥammad Amīn Khān, Cīn, Bahādur. But on Niẓāmu-l-mulk's appointment in 1125 H. (1713) to the six *ṣūbahs* of the Dakhin, he rose to a position of pre-eminence, which he never for one moment lost till his death in 1161 H. (1748), thirty-five years afterwards.

As stated a few pages back, when speaking of Muḥammad Amīn Khān, the family of Niẓāmu-l-mulk came from Samarqand. His great grand-father was 'Ālam Shaikh, son of Allāhdād, son of 'Abdu-r-raḥmān, Shaikh 'Azīzān.[1] They are said to have come originally from Sahrward. Khwāja 'Ābid, son of 'Ālam Shaikh, moved to Bukhārā, where he was first of all *Qāẓī*, then Shaikhu-l-islām. A year or two before 'Ālamgīr ascended the throne (1066-7 H., 1655-6), he passed through India on his way to Mecca. He returned at the time when 'Ālamgīr was about to start from the Dakhin to seize his father's throne. 'Ālamgīr accepted his services and gave him a high command. He filled various offices, such as that of *Ṣadārat-i-kull*, or superintendent of endowments, governor of Ajmēr, then of Multān. In the twenty-fourth year (1091-2 H., 1680-1) he fell into disgrace, but was soon pardoned and again given the *Ṣadārat-i-kull*. A year afterwards he was sent to the Dakhin, and then in the twenty-ninth year (1096-7 H., 1684-5), he became governor of Ẓafarābād Bīdar. He continued to serve with distinction in the Dakhin, until on the 24th Rabī' I. 1098 H. (30th January, 1687), at the siege of Gulkandah, he was shot in the arm and died of the wound. In the twenty-third year (1690-1) he had received the title of Qilīc Khān. He had five sons, the two youngest of whom died comparatively early in life without rising very high. The second and third sons, Mu'izzu-d-daulah, Ḥāmid Khān, and Naṣiru-d-daulah, 'Abdu-r-raḥīm Khān, were men of some fame and distinction.

[1] The table (furnished by the present Niẓām) in J. D. B. Gribble's "History of the Deccan," I, 380, gives the same steps in the genealogy thus :—

Niẓāmu-l-mulk, Āṣaf Jāh,
|
Fīrūz Jang
|
Mīr 'Ābid (Qilīc Khān),
|
Khwāja Mīr Ismā'īl
|
Khwāja 'Azīzān (Aluna)
|
Mḥd 'Ālam Shaikh, Ṣadīqī 'Ulvī,

and so on, back to Muḥammad, son of Abū Bakr, in the 33rd generation.

But the greatest of all was the eldest son, Ghāzīu-d-dīn Khān, Fīrūz Jang, and to him we now turn.

Mīr Shahābu-d-dīn was born at Samarqand about the year 1060 H. (1649-50); and followed his father to India in the twelfth year of 'Alamgīr (1079-80 H., 1668-9), when he was in his nineteenth or twentieth year. He received the rank of 300 *Zāt*, 70 horse. His special favour with 'Ālamgīr began ten years later when, at the peril of his life, he brought speedy information from a general who had been sent in pursuit of the Rānā into the hills of Udaipūr, and of whose safety no tidings could be obtained. For this service he obtained the title of Khān and from that time rose rapidly, especially after he had proved his loyalty by rejecting all advances from the emperor's rebel son, Prince Akbar. He accompanied the emperor into the Dakhin and took part in all the campaigns there for the succeeding five and twenty years. He conquered Ibrāhīmgaṛh-Ekar (also called Fīrūz-gaṛh); was conspicuous in the taking of Ḥaidarābād; Adonī (Imtiyāz-gaṛh) also fell before him. He was sent against Çambhājī, son of Çivājī, in 1099-1100 H. (1687-8), and served against Deogaṛh (Islāmgaṛh), which he captured. In the forty-eighth year, 1115-16 H., 1703-4, he pursued the Mahrattahs into Mālwah. At the time of 'Ālamgīr's death in 1118 H., 1707, he was at Elicpur, in charge of the ṣūbah of Barār. As we have already recounted (under Bahādur Shāh's reign), he took no part in the war of succession between A'ẓam Shāh and Bahādur Shāh. The Tūrānīs were not in favour with the victor, Bahādur Shāh, and thus Fīrūz Jang was moved out of the Dakhin, where he was dangerous, to the government of Aḥmadābād in Gujarāt. There he died on the 17th Shawwāl 1122 H. (8th December, 1710) at the age of sixty-two (lunar) years. He held the rank of 7,000 *zāt*. Following the usual Mughal system, his estate was confiscated on his death. It consisted of 1½ lakhs of rupees in bills on bankers, 133,000 gold *muhrs*, 25,000 *Hūn* (gold) and *nīm-pāolī* (gold), 17,000 gold *Pāolī*, 400 *adhelī* (half) and 8,000 whole silver *Pāolī*, 140 horses, 300 camels, 400 oxen and 38 elephants.

Ghāzīu-d-dīn Khān is described as the most exceptionally gifted among the Tūrānī nobles, good-natured, dignified, fortunate in war and an excellent administrator. His first wife was the daughter of Sa'd-ullāh Khān,[1] Wazīr of Shāhjahān; after her death he married in succession two of her nieces, daughters of her brother, Ḥifẓ-ullāh Khān (Miyān Khān), but by these two wives he had no children. For the last twenty years of his life he was totally blind, his sight having been

[1] S. K. died 1066 H., 1665-6, see *M-ul-u*, II, 441 and *T-i-Mḥdi*, year 1066 H.

destroyed by an epidemic which raged in the army under his command. In spite of this privation, his active career continued as before; such a case having been until then unknown in India, of a blind man continuing to command an army in the field or govern a province.

Mīr Qamaru-d-dīn, son of Ghāzīu-d-dīn Khān by the daughter of Shāhjahān's Wazīr, Sa'd-ullāh Khān, was born on the 14th Rabī' II. 1082 H., (11th August, 1671).[1] In 1095 H. (1682-3) when in his thirteenth year, he received as his first appointment in the service of the state, the rank of 400 *zāt*, 100 horse. In the following year the title of Khān was added to his name. In 1101 or 1102 H., (1690-1), he received the title of Cīn Qilīc Khān, and at 'Álamgīr's death in 1118 H., 1707, he was governor of Bījāpur. His father and he took no part in the contest for the throne between the sons of 'Ālamgīr: and when Bahādur Shāh had succeeded in defeating his rival, he removed the Tūrānīs from the Dakhin, possibly on the advice of Ẓū-l-fiqār Khān, who looked on them as his personal enemies. Ghāzīu-d-dīn Khān, Fīrūz Jang, was sent to Aḥmadābād in Gujarāt, Muḥammad Amīn Khān, Cīn, went to Murādābād as *faujdār* and Cīn Qilīc Khān was appointed Ṣūbahdār of Audh and faujdār of Gōrakhpur (15th Ramaẓān, 1119 H., 9th December, 1707). At the same time the title of the last named was changed to that of Khān Daurān, Bahādur, and he was raised to 6000 *zāt*, 6000 horse. A few weeks afterwards (5th Ẓū-l-Qa'dah, 27th January, 1708), he resigned all his titles and appointments; but at the desire of Mun'im Khān, the Wazīr, he withdrew his resignation and was promoted to 7,000 *zāt*, 7,000 horse. When his father died and the deceased's property was confiscated, Cīn Qilīc Khān (Khān Daurān as he then was) sent in his resignation afresh, 18th Ẓū-l-Ḥijjah 1122 H., 6th February, 1711; this time it was accepted, and 4,000 rupees a year were granted for his support. Quite at the end of Bahādur Shāh's reign, he returned to the active list with the titles of Ghāzīu-d-dīn Khān, Bahādur, Fīrūz Jang. On Bahādur Shāh's death, he attempted to espouse the cause of 'Aẓīmu-sh-shān,

[1] In many works there is a curious mistake as to Niẓāmu-l-mulk's age. He is said to have died in 1161 H., (1748), at the age of one hundred and four years. Orme, "Military Transactions," Madras reprint, I, 122, is the first to make this statement. Orme was in Madras at the time of the Niẓām's death (1748), and ought to have known the truth; but then he had no knowledge of Persian and no access to written authorities. Grant Duff, "History of the Mahrattahs," Bombay reprint, 265, repeats the statement, probably copying from Orme. Grant Duff was acquainted with both the *Ma'āṣiru-l-umarā*, and the *Khizānah-i-'āmirah*, a reference to either of which would have shown him that Niẓāmu-l-mulk's birth year was 1082 H.; and therefore, in 1161 H., when he died, he could have been no more than 79 lunar or 77 solar years of age. This is the age given by Elphinstone, "History," 64 1.

who long before had promised him high office, and he had made one march from Dihlī at the head of 3,000 or 4,000 men, when he heard of the prince's death. Thereupon he discharged his men and retired into private life. 'Abdu-ṣ-ṣamad Khān was the brother-in-law of his cousin, Muḥammad Amīn Khān, and this man's services to Ẓū-l-fiqār Khān had been so great, that on his account Cīn Qilīc Khān's hostile attitude was overlooked. Towards the end of Jahāndār Shāh's short reign, he was appointed to the defence of Āgrah. There he and his cousin were brought over to Farrukhsiyar's interest, as already related, through Sharī'at-ullāh Khān (Mīr Jumlah), and as a reward for his neutrality he was now made governor of the whole Dakhin, with the new titles first of Khān Khānān, and then of Niẓāmu-l-mulk, Bahādur, Fatḥ Jang.[1]

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[1] Fatḥ Jang is the title by which he is most commonly referred to by Khāfī Khān. Mīrzā Muḥammad, 399, is the authority for Khān Khānān. For the rest of the above paragraphs, see *Ma'āṣiru-l-umarā*, III, 120 (Qilīc Khān), II, 872, (Fīrūz Jang), III, 837 and 875–883 (Niẓāmu-l-mulk), also *Tārīkh-i-Khurshīd-Jāhī*, p. 372 (lithographed, Ḥaidarābād, 1287 H.), *Maāṣir-i-'Alamgīrī*, 242, 249, 259, 340, and Kāmwar Khān.

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An unrecorded Governor of Fort William in Bengal.—By C. R. Wilson, M. A.

[Read April, 1898.]

It is well known that the commonly received lists of the early Governors of Bengal are very imperfect. Quite recently, in 1888, Mr. F. C. Danvers, Registrar and Superintendent of the India Office Records, drew up a statement and memorandum tracing the Bengal Chiefs, Agents, and Governors, from the earliest dates. Yet even he has failed to notice the Governor of whose history this paper is intended to be a brief record. He was, it is true, Governor for little more than a single day, but his life more than covers the interval between Charnock and Clive, and the man himself is an interesting personality in the factory period.

Edward Stephenson[1] was born in Cumberland in the year 1691, his baptism being recorded in the parish register of Crosthwaite under the date of the 8th October of that year. His father was Edward Stephenson of Keswick. Through his mother Rebecca, he was connected with the Winders of Lorton and of the City of London. The pedigree of the Winders of Lorton has been investigated with great care by Mr. F. A. Winder of Southsea, Portsmouth,[2] to whom I am indebted for much of the information which follows. Here it will be sufficient to say that John Winder of Lorton, who died in May, 1696, left behind a numerous family among whom were his eldest son and heir John Winder, barrister-at-law of Gray's Inn; Samuel Winder, a merchant at Mark Lane, London; Jonathan Winder, his third son, who entered the New East India Company's service, and was from 1705 to 1707 one of the two Chairmen of the United Council in Bengal; and Rebecca who married, as has been said, Edward Stephenson of Keswick, by whom she had two sons, Edward and John, and a daughter, Debora.

[1] He signs "Edwd. Stephenson," and so the India Office Records always spell the name. The parish register has "Steavenson."

[2] See his paper on the subject in Vol. XIV. of the Transactions of the Cumberland and Westmorland Antiquarian and Archæological Society.

On the 3rd November, 1708, the Court of Directors of the East India Company read a petition from Edward Stephenson, then seventeen years old "praying to be entertained a writer in the Bay or elsewhere," and ordered the Committee of Accounts to examine the petitioner's qualifications.[1] On the 24th November Edward Stephenson was elected a writer in the Company's service.[2] On the 17th December following, Mr. Samuel and Mr. Jonathan Winder were accepted as securities for Edward Stephenson in £500.[3] Edward Stephenson arrived in Bengal on the 2nd February, 1710.[4] In the seventy-fifth paragraph of a letter from Bengal to the Court of Directors dated the 10th December, 1712, he was specially commended.[5] On this account he was advanced one year in service and accordingly became a Factor on the 2nd February, 1714.[6] In a list of the Company's servants drawn up in November, 1711, he appears as Sub-Accountant.

On the 5th January, 1714, he was elected third in the embassy to Delhi.[7] On the 26th February he was given two hundred and fifty rupees to provide himself with clothes and necessaries.[8] In April the boats which carried the present for Farrukhsiyar were sent up the river to Patna, and Stephenson must have left Calcutta at the same time or soon after.[9] When the Surman Diary opens in August, 1714, we find him with John Surman in Patna preparing to start for the Mogul Court. On the 6th April, 1715, the embassy actually began its journey. On the 7th July it made its entry into Delhi.[10] The next two years were spent in long, tedious, but successful negotiations. After many disappointments Farrukhsiyar and his vizier, Sayyid 'Abdu-llāh Khān, were prevailed upon to issue a number of imperial rescripts and orders increasing and securing the commercial privileges of the English in every part of India. In his

1 See Court Book XLIII., p. 231.

2 See Court Book XLIII., p. 275.

3 See Court Book XLIII., p. 344.

4 See the lists of the Company's servants which come at the end of the volumes of Consultations in the India Office Records.

5 This letter is lost, but an abstract of it will be found in the Correspondence Papers, Vol. I., 1713 to 1715.

6 See Bengal General, dated 13th January, 1713 (*i.e.*, 1714), para. 88.

7 See Bengal Public Consultations of that date. On further discussion, Khojah Sarhad being appointed second, John Pratt became third, and Stephenson, Secretary. Finally Pratt withdrew and on the 4th March Stephenson was again appointed third.

8 See Bengal Public Consultations of that date.

9 *Ib.*

10 See the Surman Diary under the dates given.

old age Stephenson was consulted by Orme about the history of this embassy in which he played no small part and of which he was in 1765 the sole survivor. On the 18th July, 1717, the embassy left Delhi and returned to Calcutta on the 22nd November.[1]

From the embassy Stephenson went to Balasor to be Chief of the local factory; but in July, August, 1718, he was transferred to the Council at Patna of which he became Chief on the 25th June, 1719.[2] In September, 1720, he was confirmed in this appointment, and given a gratuity of £300 for his services in connection with the embassy.[3]

After eight years of uneventful service, first as Chief at Patna, and afterwards as Chief at Cassimbazar, he was suddenly called upon to fill the highest post of all. "On Friday, the 23rd August, 1718," says the Consultations Book, "the Hon. Henry Frankland, Esq., late President, having, after a sickness of about twelve days, departed this life at one o'clock this morning, and the Worshipful Edward Stephenson, Esq., being next in succession, who is now Chief at Cassimbazar, it is unanimously agreed that we despatch a pair of *qāṣids* to advise him that thereby the government of this place devolves on him." The Consultations Book continues the story on Tuesday the 17th September. "This morning at nine o'clock the Hon. Edward Stephenson, Esq., arrived here from Cassimbazar and took his place at this board as President and Governor of Fort William in Bengal to which he succeeds by the death of our late President, the Hon. Henry Frankland, Esq., and accordingly the commission and keys of the fort were now delivered him." His rule was short. On the evening of Wednesday the 18th John Deane who had already held supreme authority, from 1723 to 1726, returned from England and resumed his former position. "At eight o'clock in the night arrived here John Deane, Esq., who produced the Honorable Company's commission for appointing him President and Governor of all their affairs in Bengal; which commission was read in the Consultation Room, Fort William, in the presence of all the Company's servants, &c., and accordingly the keys of the fort were delivered to him by Edward Stephenson, Esq."[4]

[1] See the Surman Diary and the Bengal Public Consultations of the dates given.

[2] See Bengal Public Consultations as before. [3] *Ib.*

[4] No notice of these changes is to be found in any of our authorities. Even Mr. Danvers in his carefully compiled list of Bengal Governors has omitted Edward Stephenson and the second governorship of John Deane. According to him Henry Frankland assumed office on the 30th January, 1726, and returned to Europe on the 25th February, 1732. Whereas, as I have said, Henry Frankland died on the 23rd August, 1728, and was succeeded by Edward Stephenson, who after actually holding office for a day and a half was superseded by John Deane on the night of the 18th

Stephenson accordingly returned to Cassimbazar where he remained another year. At the end of 1729 he resigned the chiefship of that place, and came down to Calcutta, whence he sailed for England on the *Eyles* at the beginning of 1730.[1]

It was probably after his return home that "Governor" Stephenson married the lady whose death on the 24th February, 1744, is recorded in the Gentleman's Magazine.[2] In 1764 Orme, who was collecting materials for the second volume of his history wrote as follows to Stephenson[3]:—

"Concerning the embassy to Furruckseer.

To Mr. Stevenson.

Sir,

It is not impossible that you may have seen my work of the military transactions in India, and if your opinion of it has induced you to wish for the continuance of it, my present requests to you will carry their excuse with them; otherwise this intrusion will scarce admit of an apology.

In order to explain the late revolutions in Bengal, it appears to me absolutely necessary to explain the embassy to Furruckshir on which you went with Mr. Surman. These papers are in the India house where I am suffered to peruse them, but from whence I am not permitted to take them. As I am very infirm it is very seldom that I can go there, and when there, my attention is distracted by the variety of clerks and business, which surround me. If you have these papers in your possession, I shall be very much obliged to you for the loan of them for a few days. I will take great care of them, and return them punctually at the limited time. Should you be induced to comply with this request I beg the favour you will omit no scrap however insignificant in appearance, for it has often happened that a few words lead to very material knowledge.

I have always looked upon the Phirmaunds, which you obtained from Furuckshir, as the Magna Charter of the Company until of late years. It is true that the great Phirmaund, as published by Mr. Frazer, seems to imply a general permission of trading to all places in all articles. But I much doubt whether the Mogul ever intended that we should extend our sales beyond what was importation from foreign parts, or our purchases beyond what was intended for exportation. At least I am sure that all the while I was in Bengal, no Englishman dared to trade in salt, beetle or tobacco, and if they carried any others of the productions of the country from one port to another of the province of Bengal, they were permitted only because the profits were known to be very small and not worth the attention of the

September. It was John Deane who, having thus become a second time Governor returned to Europe on the 25th February, 1732.

1 See Bengal Public Consultations.

2 Gentleman's Magazine for 1744, p. 108.

3 Orme Collections XV. Letter from Mr. Orme to Mr. Stevenson, pp. 4131-4133.

natives to make a quarrel about. I should be glad, therefore, to know from you, Sir, who are the only man alive that can tell me, whether these restrictions were not intended, although they may not be expressed in the Phirmaund.

It was a report whilst I was in Bengal that you had obtained from the Mogul an addition of 84 villages to the ground which contained all the Company's territory ten years ago; that is from Perrings to Surman's garden: but that the Nabob Jaffeir Khan set his face against this accession of territory, and would not suffer the company to take possession of it. It was likewise a common talk, that Mr. Surman offended Jaffeir Khan on his return from Delhi, by asserting that the title of his Munsub being higher than the Nabob's, the Nabob ought in some ceremonies, which were to pass between them, to give him the precedence. I was young when in Bengal and never thinking of the work I am now engaged in, took these stories as they were told at table talk, and having forgot one half of the particulars, have little confidence in, nor indeed a clear idea of the rest. But by the Phirmaund published by Mr. Frazer it appears that the Mogul only granted 40 vingas, that is about 30 acres of ground to any settlements which the Company might make in Bengal or Orissa. So that the 84 villages must have been, if granted at all, in a separate Phirmaund.

Again, Sir, I should be glad to know what particular and extraordinary oppressions from the Government the Company suffered, to induce them to be at the expense of your embassy.

It was in consequence of great oppressions that in the year 1685, the old Company sent out an armanent and ordered Job Chanock to fight. The papers of old date which came from abroad, are in such extreme confusion at the India House, that there is no possibility of divining where Job Chanock's letter to the Company, informing them of his expedition, lies; so that I despair of ever seeing it. Perhaps, Sir, you by being in India, not many years after that event, may be able to give some account of it. Where he marched from and to; whom he fought; and the success; which by a letter, wrote by the Directors after the expedition, seems to have been no wise satisfactory to them.

I am far from expecting that you should be at the trouble of giving me in writing all the details concerning the informations I want; but an hour's conversation with you will, I hope, be deemed no unreasonable request, although I am a perfect stranger to you. If, therefore, you will permit me to wait on you the first time you come to town, I shall be much obliged for notice the day before, when I can have the pleasure of seeing you at your house in Queen Square. All I can say, Sir, is, that as you are the only person living who can give me these informations, my obligation will be equal to the difficulty of obtaining them elsewhere, very great indeed.

I am, Sir, with much respect,

Your very obedient humble Servant,

R. ORME."

Harley Street, Cavendish Square,
August 4th, 1764.

From this it would appear that Edward Stephenson at this time resided chiefly in the country, perhaps at Borfield Lodge, Essex, and only occasionally came to town where he had a house in Queen's Square. Orme has preserved the following "memorandums of a conversation[1]:"

"*Memorandums of a conversation with Edward Stephenson, Esq., who went on the Embassy to Furruckseer; taken on the same day I visited him January 17th, 1765.*

He says that all the Lands in a province in Indostan excepting such as are governed by Rajahs, consist either of Colsa lands or Jagueers.

Jagueers are lands given to the Nabobs, Phousdars, or other Officers of the State, by the Crown, to be held only during their administration or continuance in favour, of which lands the temporary Lord receives the revenues or advantages, on condition that he keeps up the number of horse at which his Munsub or title of nobility is rated, and likewise the number of foot which are always in one settled proportion attached to the number of horse, this Mr. Stephenson believes to be double. So that a Munsub of 4,000 horse is to maintain besides those 4,000 horse, 8,000 foot, and he receives the rents of his Jagueer without deductions or taxes due to the Crown.

The Colsa lands are such as being neither governed by Rajahs, nor portioned into Jagueers remain to the Moorish Government to be administered by their own officers. All the Colsa lands are under the administration of the Duan, who farms them out to Renters for 1, 2, 3, 4, 5, etc. years, and the rents forthcoming from them are brought by the Duan into his account with the Emperor.

The territories governed by Rajahs are for the most part the same, which the ancestors of these Rajahs ruled at the time of conquest. It sometimes likewise has happened that Rajahs, who for the convenience of the Government, have been removed out of their hereditary lands, have been placed in other vacant territories.

These Rajahs govern according to the ancient institutions of their forefathers over the Indians their subjects; but over Mahomedans established in their territory they have not except by particular permission any authority of life or corporal punishment, for a Mahomedan always calls upon the Koran and the Cadi who is the interpreter of the Koran for this [his] Judge.

The Rajahs pay the stipulated tribute to the Duan.

The Duan therefore must be an officer of very great power, equal almost to the Nabob. His functions are:

1st. Supreme authority over the Colsah lands in all cases where the land is concerned.

[1] Orme Collections O. V. 12, pp. 107-109.

2nd. Receiver general of all the Customs established in the Mogul's name. In the Jagueer lands the Nabob or Jaggueer Lord collects the customs, but cannot impose them in detriment to the interests of the Crown, against the will of the Duan. In the Rajahs' lands the Rajahs have likewise the same rights as the Nabobs in the Jaggueer lands; but with the same limitations.

3rd. He is Agent for the Crown or rather Executor to the estates of all the feudatories who die.

The dependance which the Duan has on the Nabob consists in being obliged to apply to him for forces, for keeping in order the Rajahs or the Colsah inhabitants who do not regularly and punctually pay their debts to the Crown."

Whether Orme ever saw Stephenson again, whether they ever talked upon any other points, I cannot say, but perhaps Stephenson was too infirm to enter into lengthy discussions. Three years later, on the 7th September, 1768, "Governor" Stephenson died at his house in Queen's Square;[1] and was buried in the family vault at Keswick in Cumberland.[2] He left no will and the administration of his property was granted on the 23rd September "to John Stephenson, Esq., the natural and lawful brother and next of kin of the said deceased."[3] John Stephenson died in 1771, aged 72, at Mount Pleasant.[4] He left a very lengthy will, of which the most important provisions are the following[5]:—

I, John Stephenson, late of East St., Red Lion Square, London, but now of Tottenham High Cross, Esquire, make my will. Body to be burried in my family vault at Keswick, Cumberland, where my late brother Edward Stephenson is interred. I give and bequeath, unto Rev. Mr. Christian of Keswick, clerk, £50; to Henry Littledale gent, £500; to William Battie, doctor of Physic, £20; my steward Joseph Clarke of Bodybury, Kent, Hannah Wilson of Keswick, my Steward William Graham of Sikeside, Cumberland, Hannah Basford, John Fletcher, (servant of my son Edward Stephenson) each £20 for mourning. To Anthony Askew, of Queen's Square, London, doctor of physic, and my cousin Rowland Stephenson, of Lombard St., London, Banker, my two Executors, £500 each. To James Farrer, of Bread St. Hill, gent, and Thomas Lewis of Theobald's Row, London, carpenter, my Trustees, £500, each.

William Battie and Anthony Askew to have care of my son. To James Farrer and Thomas Lewis, heirs and assigns, all my freehold and copyhold;

[1] See Gentleman's Magazine for 1768, Vol. 38, pp. 447, 494.

[2] See the Will of John Stephenson given below.

[3] P. C. C., A. A. 1768.

[4] Gentleman's Magazine for 1771, p. 239.

[5] Proved 1771. P. C. C. Trevor, No. 230.

manors, messuages, lands, etc., for uses herein after expressed:—*viz*: £1000 yearly for use and support of Edward Stephenson, my son, during life and heirs ..... if my son die without issue ... then to Anthony Askew, ...

For these details I am indebted to Mr. F. A. Winder, who also tells me that Edward Stephenson built "Governor House," Keswick, and that a descendant of the family is still living in Paris at a place called "Governor's House." The following inscription is cut in stone on the chancel floor of Crosthwaite Parish Church.

"Edward Stephenson, Esquire,
"late Governor
"of Bengal.
"Obt. Sep. 7, 1768.
"Ætat. 77."

The discovery of a work by Āryadēva in Sanskrit.—By MAHĀMAHŌPĀDHYĀYA HARAPRASĀD SHĀSTRĪ, *Professor of Sanskrit, Presidency College.*

[Read January, 1898.]

When in Nepal I paid a visit to His Excellency Dēva Shamshēr Jang Rāṇā Bahādur, Commander-in-Chief of the Nepal Army. At the interview were present a Hindu Paṇḍit and a Buddhist Bāḍā. There was a collection of Manuscripts and I was asked by His Excellency if I knew anything of these Manuscripts. There were some volumes of the Çatasāhasrikā-prajñā-pāramitā, a MS. of the Aṣṭasāhasrikā-prajñā-pāramitā written in the reign of Rāmapāla who is said to have been a king of Eastern Bengal and who reigned about the year 1000 A.D.; a MS. of a work on the influence of the heavenly bodies on human diseases. But there was a bundle of palm-leaves which I could not identify at first sight. It had no beginning and apparently no end. I solicited the permission of His Excellency to give me an opportunity of examining the MS., once more. It was therefore deposited with the Head Master of the Durbar School, Bābū Phaṇibhūṣaṇa Adhikārī. I called on him a few days later, examined the MS. very carefully and took a copy of it in Bengali. It was written in old Nēvārī and was in many places altogether obliterated. The first leaf was missing. There were eight leaves from 2 to 9 but the obverse side of the 7th was altogether illegible. There were altogether 125 verses from 6 to 131. Of the 6th verse only the last two caraṇas remain. Of the 3rd caraṇa the first letter was missing. That letter I had no difficulty in guessing. It was *Ma* because the second leaf begins with the letters *hāyāne.* After the 131st verse the following statement occurs.

कृतिरियं आर्य्यदेवपादानामिति ॥ स्वपरार्थहेतुना स्वात्र (?) हरितव्रेति शुभं मये लिखितम् । यथात्मनः प्रियाः प्राणाः सर्व्वेषां प्राणिनां तथा ।

The name of the work is not given but it is stated in the colophon that it was the work of Āryadēva a name familiar to every reader of Buddhist Literature, and especially of the Siyuki. He was a disciple

of Nāgārjuna and one of those great men who helped the spread of the Mahāyāna doctrines of Buddhism. Beal says, "he had a great contempt for external forms of worship. 'A Spirit' he said, is 'Spiritnul.' We are not surprised to find therefore, that his teaching was of a mystical character." I find, the same thing exemplified before me. Thus he speaks of the bathing in the Ganges in my Manuscript:—

इत्थं अशुचिसम्भृतः पिण्डो ह्यशुचिपूरितः ।
कथं सन् तादृशः कायो गङ्गास्नानेन शुध्यति ॥ ६० ॥
न ह्यशुचिघटस्तोयैः क्षालितोऽपि पुनः पुनः ।
तद्वदशुचिसम्पूर्णः पिण्डोऽपि न विशुध्यति ॥ ६१ ॥
प्रतरन्नपि गङ्गायां नैव श्वा शुद्धिमर्हति ।
तस्मात् धर्म्मेधियां पुंसां तीर्थस्नानं तु निष्फलम् ॥ ६२ ॥
धर्म्मो यदि भवेत् स्नानात् केवर्त्तानां कृतार्थता ।
नक्तंदिवं प्रविष्टानां मत्स्यादीनान्तु का कथा ॥ ६३ ॥
पापक्षयोऽपि स्नानेन नैव स्यादिति निश्चयः ।
यतो रागादिवृद्धिस्तु दृश्यते तीर्थसेविनाम् ॥ ६४ ॥

Thus this lump (of flesh, meaning the human body) is produced by and is full of impure substances. How can it be purified by bathing in the Ganges? An impure waterpot though washed again and again by water, cannot be pure; so the lump full of impurities can never be pure. A dog swimming in the Ganges is not considered pure, therefore the bathing in holy places is absolutely useless. If bathing can confer merit the fishermen are very meritorious, not to speak of the fishes and others who are immersed in water, day and night. It is certain that from bathing sin even is not dissipated because people who are in the habit of making pilgrimages are full of love, hatred, &c.

Thus in the course of five short verses, Āryadēva denounces the uselessness not only of bathing in the Ganges but of all bathings and pilgrimages. They are not only incapable of conferring merit but are also incapable of dissipating sin.

The ninth verse of the MS. corresponds to the first verse of the Dhammapada in Pali but the Pali verse has six caraṇas while my verse has four only. The last letter of the second caraṇa is *manōjavāḥ* in my MS. while in Pali it is *manōmayā*.

The work appears to be a complete one as at the end Āryadēva says:

चित्तविशुद्धिमाधाय यन्मयोपार्ज्जितं शुभम् ।
चित्तविशुद्धिमाधाय तेनास्तु सुखिनो जनाः ॥

Let people be happy by making their hearts pure by the merit which I have acquired by making my heart pure.

Then comes the colophon; after the colophon we have the name of the scribe and then a portion of the well-known formula यथात्मनः प्रियाः प्राणाः सर्व्वेषां प्राणिनां तथा। The writer apparently had no space in the leaf to complete the couplet and at first sight I could not make out that the work came to an end there.

(म)ह्यायाने सुविस्पष्टमुक्तमेतत् सुविस्तरम् ॥ ६ ॥
धर्म्मपुद्गलनैरात्म्याच्चित्तमात्रं जगौ मुनिः ।
ततोऽपि सर्व्वमुत्पन्नं गमकं सुनिराकुलम् ॥ ७ ॥
भावग्रहप्रभावेण(प्रहावेण) गृहीतान् प्रति चोदितम् ।
आगमेऽपि हि सुव्यक्तं विस्तरं करुणात्मना ॥ ८ ॥
मनःपूर्व्वङ्गमा धर्म्मा मनः श्रेष्ठं मनोजवाः ।
मनसा च प्रदुष्टेन भाषते वा करोति वा ॥ ९ ॥
स्वपिता भिक्षुणादिष्टः शौभ्रं गच्छति प्रेरितम् ।
आयुष्य च मृते तस्मिन्नानन्तर्य्येण गृह्यते ॥ १० ॥
स्वग्लानेनार्हतादिष्टः स्वगलं परिपीडितम् ।
उपस्थायकभिक्षुः स मृते तस्मिन्न दोषभाक् ॥ ११ ॥
अन्यसङ्कीर्नि चाख्यन्तु मारयन् दोषमश्नुते ।
इत्युक्तं विनये व्यक्तं न दोषो ऽदुष्टचेतसाम् ॥ १२ ॥
न सूपखलये दोषस्तत्संस्कारधिया मतम् ।
केवलं पुण्यराशिः स्यादुखानन्तर्य्यकारिणाम् ॥ १३ ॥
उपानयुगलं दत्वा मुनेर्मूर्द्धि शुभाशयात् ।
अपनीय तथा चान्यं राज्यं फलमवाप्नुतः ॥ १४ ॥
तस्मादाश्रयमूला हि पापकर्म्मव्यवस्थितिः ।
इत्युक्तमागमे यस्मात् नापत्तिः शुभचेतसाम् ॥ १५ ॥
स्वाधिदेवतयोगात्मा जगदर्थकृतोद्यमः ।
भुञ्जानो विषयान् योगान्मुच्यते न चलिष्यति ॥ १६ ॥
यथैव विषतत्वज्ञो विषमालोक्य भक्षयन् ।
केवलं मुच्यते नासौ रोगमुक्तश्च जायते ॥ १७ ॥
मायामरीचि-गन्धर्व्वनगर-स्वप्नसन्निभम् ।
जगत्सर्व्वं समालोक्य किं कथं केन भुज्यते ॥ १८ ॥

* 19th verse is not in the MS.

बाला मज्जन्ति रूपेषु वैराग्यं यान्ति मध्यमाः ।
स्वभावज्ञा विमुच्यन्ते रूपस्योत्तमबुद्धयः ॥ २० ॥
विचिन्त्य समयं सर्व्वं देवतापूजनाविधिम् ।
शुद्धमालोक्य निःशङ्कं भोक्तव्यं मन्त्रचोदितम् ॥ २१ ॥
ग्रोह्यं बोध्यं तथा दोह्यं अङ्गरचययोगतः ।
अनामाङ्गुष्ठवक्त्राभ्यां प्रीणयेच्च तथागतान् ॥ २२ ॥
यत् सत्यमिति बालानां तन्मिथ्या खलु योगिनाम् ।
कायेनैव तु सम्प्राप्तं न बद्धो न च मुच्यते ॥ २३ ॥
संसारं चैव निर्व्वाणं मन्यन्ते तत्त्वदर्शिनः ।
न संसारं न निर्व्वाणं मन्यन्ते तत्त्वदर्शिनः ॥ २४ ॥
विकल्पो हि महाग्राहः संसारोदधिपाटकः ।
अविकल्पा महात्मानो मुच्यन्ते भवबन्धनात् ॥ २५ ॥
शङ्काविषेण बाध्यन्ते विषेणैव पृथक्जनाः ।
तामेवोत्खाल्य निर्मूलं विचरेत् करुणात्मकः ॥ २६ ॥
यथैकः स्फटिकः स्वच्छः पररागेण रज्यते ।
तथैव चित्तरत्नन्तु कल्पनारागरञ्जितम् ॥ २७ ॥
प्रकृते कल्पनारागैर्विविक्तं चित्तरत्नकम् ।
आदिशुद्धमनुत्पन्नं निजरूपमनाविलम् ॥ २८ ॥
तत्तथत्वेन कर्त्तव्यं यद्यदालविगर्हितम् ।
स्वाधिदैवतयोगेन चित्तनिर्म्मलकारिणा ॥ २९ ॥
रागाग्निविषसंयुक्ता योगिनां शुद्धचेतसा ।
कामिताः खलु कामिन्यः कामामोघफलावहाः ॥ ३० ॥
यथा सगरुडं ध्यात्वा गारुडिको विषं पिबन् ।
करोति हि विषं साध्यं न विषेणाभिभूयते ॥ ३१ ॥
द्वादशयोजनव्यासं चक्रं वै शिरसि भ्रमन् ।
बोधिचित्तमनुत्पाद्य आपनीतमिति श्रुतिः ॥ ३२ ॥
बोधिचित्तं समुत्पाद्य सम्बोधौ दृढचेतसा ।
तन्नास्ति यन्न कर्त्तव्यं जगदुद्धरणाशया ॥ ३३ ॥
आदिशुद्धमनुत्पन्नं निःस्वभावमनाविलम् ।
जगत् भावेन संपश्यन्न बद्धो न च मुच्यते ॥ ३४ ॥

विचिन्त्य विधिवद्योगी देवतागुणविस्तरम् ।
रागयेत् रागचित्तेन रज्यते न च मुच्यते ॥ ३५ ॥
किं कुर्म्मः कलया लभ्या विचित्रा भावग्रन्थयः ।
विषाज्ञा(घ्रा)तो यथा कश्चिद्विषेणैव तु निर्विषः ॥ ३६ ॥
कषाञ्जलं जलेनैव कण्टकेनैव कण्टकम् ।
रागेणैव तथा रागमुद्धरन्ति मनीषिणः ॥ ३७ ॥
यथैव रजको वस्त्रं मलेनैव तु निर्म्मलम् ।
कुर्य्याद्विशुद्धयात्मानं मलेनैव तु निर्म्मलम् ॥ ३८ ॥
यथा भवति संशुद्धो रजोनिघृष्टदर्पणः ।
सेवितस्तु तथा विद्वैर्दोषादोषविनाशनः ॥ ३९ ॥
लोहपिण्डो जले क्षिप्तो मज्जत्येव तु केवलम् ।
पात्रीकृतं तदेवान्यं तारयेत् तरति स्वयम् ॥ ४० ॥
तद्वत् पात्रीकृतं चित्तं प्रज्ञोपायविधानतः ।
भुञ्जानो मुच्यते कामं मोचयत्यपरानपि ॥ ४१ ॥
दुर्विद्वैः सेवितः कामः कामो भवति बन्धनम् ।
स एव सेवितो विद्वैः कामो मोक्षप्रसाधकः ॥ ४२ ॥
प्रसिद्धं सहसालोक्य क्षारं विषविनाशनम् ।
तदेव फणिभिः पीतं सुतरां विषवर्द्धनम् ॥ ४३ ॥
जले क्षीरं यथाविष्टं हंसः पिबति पण्डितः ।
सविषान् विषयांस्तद्वदुक्तमुक्तञ्च पण्डितः ॥ ४४ ॥
यथैव विधिवद्भुक्तं विषमप्यमृतायते ।
दुर्भुक्तं घृतपूरादि बालानान्तु विषायते ॥ ४५ ॥
इदमेव हि यच्चित्तं शोधितं हेतुभिः शुभैः ।
निर्विकल्पं निरालम्बं भाति प्रकृतिनिर्मलम् ॥ ४६ ॥
यथा वह्निः कृशोऽप्येष तैलदृत्यादिसंस्कृतः ।
दीपो निर्मलनिष्कम्पः स्थिरस्तिमिरनाशनः ॥ ४७ ॥
वटबीजं यथा सूक्ष्मं सहकारसमन्वितं ।
शाखा-मूल-फलोपेतं महावृक्षविधायकं ॥ ४८ ॥
हरिद्राचूर्णसंयोगाद्वर्णान्तरमिति स्मृतं ।
प्रज्ञोपायसमायोगाद्धर्म्मधातुं तथा विदुः ॥ ४९ ॥

घृतञ्च मधुसंयुक्तं समांसं विषतां व्रजेत् ।
तदेव विधिवद्युक्तमुत्कृष्टन्तु रसायनं ॥ ५० ॥
रसस्पृष्टं यथा ताम्रं निर्दोषकाञ्चनं व्रजेत् ।
ज्ञानदृष्टास्तथा लोभ्राः लोभ्राः कल्याणकारकाः ॥ ५१ ॥
हीनयानाभिरूढ़ानां मत्यभद्रा पदेपदे ।
संग्रामजयतुल्येन (स्तु तेषां) दूर एव व्यवस्थितः ॥ ५२ ॥
महायानाभिरूढस्तु करुणाधर्म्मवर्म्मितः ।
कृपानयधनुर्बाणो जगदुद्धरणाशयः ॥ ५३ ॥
महासत्त्वो महोपायः स्थिरबुद्धिरतन्द्रितः ।
जित्वा दुस्तरसंग्रामं तारयन्त्यपरानपि ॥ ५४ ॥
पशवोऽपि हि क्लिश्यन्ते स्वार्थमात्रपरायणाः ।
जगदर्थविधातारो धन्यास्ते विरला जनाः ॥ ५५ ॥
शीतवातादिदुःखानि सहन्ते स्वार्थलम्पटाः ।
जगदर्थप्रवृत्तास्ते न सहन्ते कथं नु ते ॥ ५६ ॥
नारकाण्यपि दुःखानि सोढव्यानि कृपालुभिः ।
शीतवातादिदुःखानि कस्तान्यपि विचारयेत् ॥ ५७ ॥
नानिष्टकल्पनां कुर्य्यान्नोपवासं न च क्रियाम् ।
स्नानशौचं न चैवात्र ग्रामधर्म्मं विवर्ज्जयेत् ॥ ५८ ॥
नखदन्तास्थिमज्जानः पितुः शुक्रविकारजाः ।
मांसशोणितकेशादि मातृशोणितसम्भवम् ॥ ५९ ॥
इत्थमशुचिसम्भूतः पिण्डो ह्यशुचिपूरितः ।
कथं सन् तादृशः कायो गङ्गास्नानेन शुध्यति ॥ ६० ॥
न ह्यशुचिघटस्तोयैः क्षालितोऽपि पुनः पुनः ।
तद्वदशुचिसम्पूर्णः पिण्डोऽपि न विशुध्यति ॥ ६१ ॥
प्रतरन्नपि गङ्गायां नैव श्वा शुद्धिमर्हति ।
तस्माद्धर्म्मधियां पुंसां तीर्थस्नानन्तु निष्फलम् ॥ ६२ ॥
धर्म्मो यदि भवेत् स्नानात् कैवर्त्तानां कृतार्थता ।
नक्रनन्दिवं प्रविष्टानां मत्स्यादीनान्तु का कथा ॥ ६३ ॥
पापक्षयोऽपि स्नानेन नैव स्यादिति निश्चयः ।
यतो रागादिवृद्धिस्तु दृश्यते तीर्थसेविनाम् ॥ ६४ ॥

रागो द्वेषश्च मोहश्च ईर्ष्या तृष्णा च सर्व्वदा ।
पापानां मूलमाख्यातं तेषां स्नानेन शोधनम् ॥ ६५ ॥
आत्मात्मीयग्रहादेते सम्भवन्तीह जन्मिनाम् ।
अविद्याहेतुकः सोऽपि अविद्या भ्रान्तिरिष्यते ॥ ६६ ॥
रौप्यबुद्धिर्यथा शुक्तौ शुक्तिदृष्टे निवर्त्तते ।
नैरात्म्यदर्शनात् सापि निर्मूलमवसीदति ॥ ६७ ॥
सर्पबुद्धिर्यथा रज्जौ रज्जुदृष्टे निवर्त्तते ।
सर्पबुद्धिः पुनस्तत्र नैव स्यादिह जन्मनि ॥ ६८ ॥
सत्यबुद्धिस्तथाऽत्रापि वस्तुज्ञानान्निवर्त्तते ।
न भूयः सम्भवेत्तत्र दग्धबीज इवाङ्कुरः ॥ ६९ ॥
नैरात्म्यशुचिसंस्पृष्टः पिण्डः प्रकृतिनिर्म्मलः ।
तस्य सन्तापने धर्म्मैः कथं बालैर्विकल्पितः ॥ ७० ॥
चन्द्रोदयव्ययश्चापि अपेक्षतिथिकल्पना ।
सूर्य्योदयव्ययेनापि दिवारात्रिव्यवस्थितिः ॥ ७१ ॥
पूर्व्वादित्यवहाराख्यः शब्दत्रयविकल्पना ।
वारनक्षत्रराश्यादि सर्व्वलोका विकल्पितम् ॥ ७२ ॥
शीतोष्णवर्षणापेक्षं तथैवर्त्तुकल्पना ।
स्वकर्म्मफलभोगोऽयं शुभाशुभग्रहादितः ॥ ७३ ॥
अविद्याकर्दमालिप्तं चित्तचिन्तामणिः पुमान् ।
प्रक्षेप्तुः क्षालितुं विद्वान् कोऽविद्यां वहयेत्पुनः ॥ ७४ ॥
न वारतिथिनक्षत्रदेशकालाद्यपेक्षणात् ।
विहरन्निर्विकल्पस्तु निर्निमित्तमश्नुते ॥ ७५ ॥
यद्यदिन्द्रियमार्गत्वं यायात्तत्तत् स्वभावतः ।
सुसमाहितयोगेन सर्व्वबुद्धमयं वहेत् ॥ ७६ ॥
चक्षुर्विरोचनो बुद्धः श्रवणो वज्रशून्यकः ।
घ्राणश्च परमाद्यस्तु पद्मनर्त्तेश्वरो मुखम् ॥ ७७ ॥
कायः श्रीहरको राजा वज्रसत्त्वश्च मानसम् ।
एवं सम्यक् यदा योगी विचरेत् करुणात्मकः ॥ ७८ ॥
सिद्धान्तो निर्विकल्पोऽसौ स्थिरकल्पस्तु शोधनः ।
यथेष्टचेष्टाव्याहारो सर्व्वभुक् सर्व्वशस्तथा ॥ ७९ ॥

सर्व्वकामक्रियाकारी यथा रुचिरचेष्टितम् ।
उत्थितो वा निषण्णो वा चंक्रमो वा स्वयन्तथा ॥ ८० ॥
अमग्नप्रविष्टो वा सर्व्वावरणवानपि ।
स्वाधिदैवतयोगात्मा मन्दपुण्योऽपि सिध्यति ॥ ८१ ॥
अनेन सर्व्वसौरित्वं सर्व्वबुद्धत्वमेव च ।
जन्मनीहैव तत्त्वज्ञः संप्राप्नोति न संशयः ॥ ८२ ॥
यथा प्राकृतको लोको योगिलोकेन बाध्यते ।
बाध्यन्ते धीविशेषेण योगिनोऽप्युत्तरोत्तरैः ॥ ८३ ॥
महाप्रज्ञा महोपाया महाकृपाधिमोक्षतः ॥
महायानसमुद्दिष्टं महासत्त्वस्य गोचरम् ॥ ८४ ॥
यत्कल्पनामसंख्याये न प्राप्तं बहुभिर्मतैः ।
जन्मन्यत्रैव बुद्धत्वं प्राप्यते न च संशयः ॥ ८५ ॥
महायानस्य माहात्म्यात् पुण्यज्ञानस्य सम्भवः ।
सर्व्वज्ञत्वपदं रम्यं सद्यो जन्मनि लभ्यते ॥ ८६ ॥
आगमश्रुतिचिन्ता तु महायाने तु गृह्यते ।
आश्रयानुश्रयाभेदाद्यानभेदः प्रकाश्यते ॥ ८७ ॥
अन्यत्र बोधिमोक्षोऽयमन्यथा बोधिचारिका ॥
अन्या चित्तविशुद्धिश्च फलमन्यदिहोच्यते ॥ ८८ ॥
समीपं निर्मलादर्शे चिरं निर्मलचक्षुषः ।
यथा भाति सुविस्पष्टं स्वच्छप्रकृतिनिर्मलम् ॥ ८९ ॥
विधूतकल्पनाजालं विस्पष्टशुद्धचेतसा ।
योगिनाञ्च तथा ज्ञानं प्रज्ञानिर्मलदर्पणैः ॥ ९० ॥
सूर्य्यकान्तसमाश्लिष्टसूर्य्यकान्तमणौ यथा ।
सहसा प्रज्वलत्यग्निः समर्थः स्वार्थसाधने ॥ ९१ ॥
अपास्तकल्पनाजालं सूर्य्यकान्तनिभं मनः ।
प्रज्ञासूर्य्यांशुसंश्लिष्टं तद्ज्वलति योगिनाम् ॥ ९२ ॥
काष्ठद्वयनिघर्षेण यथा ज्वलति पावकः ।
आदिमध्यान्तसंशुद्धः स वै वस्तुप्रसाधकः ॥ ९३ ॥
प्रज्ञोपायसमायोगाद्योगाद् ज्ञानं तथा विदुः ।
यथैवैकप्रदीपोऽयं वर्त्त्यन्तरसमाश्रितः ॥ ९४ ॥

यथा स्थानं यथा स्वार्थं करोत्युच्चैः प्रकाशनम् ।
नानाधिमुक्तिसत्त्वानां यथाकृत्यमनुष्ठयेत् ॥ ९५ ॥
निर्दोषं शीतलं हृद्यं सर्व्वव्याधिविनाशनम् ।
प्रज्ञाक्षीरमहोपायचिरत्नमथनोत्थितम् ॥ ९६ ॥
स्फुरणानन्तमूर्त्तिस्तु प्रज्ञोपायविभावनैः ।
विधिज्ञो हि यथा कश्चित् क्षीरादमृतमुद्धरेत् ॥ ९७ ॥
विशुद्धधर्म्मधातुः स शुभाशुभविनाशनः ।
यथा लतासमुद्भूतं फलपुष्पसमन्वितम् ॥ ९८ ॥
यथैकक्षणसंबोधिः संभारद्वयसंयुता ।
... ... धर्षणाकर्षणादिकम् ॥ ९९ ॥
मद्यमांसरतो योगी कुर्व्वनप्युपलभ्यते ।
... ... मादर्शः समीक्ष्यते ॥ १०० ॥
महायाने यतोऽद्यापि मन्त्रसामर्थ्यदर्शनात् ।
माद्रदुहितृसम्बन्ध ... ... ॥ १०१ ॥
... ... जगदाह तथागतः ।
पञ्च बुद्धात्मकं शुक्रं प्रोक्षितत्वापि तादृशम् ॥ १०२ ॥
तन्मयः खलु पिण्डोऽयं को विप्रः कश्च वान्त्यजः ।
... ... सर्व्वं शरीरं खलु भिक्षवः ॥ १०३ ॥
अनित्यं दुःखशून्यञ्च न जातिर्न च जातिवान् ।
कैवर्त्तीगर्भसम्भूतः कश्चिच ... ... ॥ १०४ ॥
चित्तं यथा सुखं ध्यायन् सम्बुद्धोऽयमनागतः ।
सर्व्वकामोपभोगोऽस्तु रमथ मुक्ततोऽभयात् ॥ ११२ ॥
मा भैष्ठा नास्ति वः पापं समयो दुरतिक्रमः ।
मन्त्रसंस्कृतकाष्ठादि देवत्वमधिगच्छति ॥ ११३ ॥
किं पुनः ज्ञानवान् कायः कार्य्यमोहविचेष्टितम् ।
प्राकृतत्वमहङ्कारं परित्यज्य समाहितः ॥ २१४ ॥
प्रज्ञोपायविधानेन क्रियामिमाङ्गमाचरेत् ।
पङ्कजातं यथा पङ्कं पङ्कदोषैर्न लिप्यते ॥ ११५ ॥
विकल्पवासनादोषैस्तथा योगी न लिप्यते ।
अनादिवासनापङ्कैर्विलिप्तं चित्तरत्नकम् ॥ ११६ ॥
प्रज्ञोपायजलेनैव ... ... ।
साधिदैवतयोगस्य स्थिरचित्तस्य धीमतः ॥ ११७ ॥

मुक्तः कुदृष्टिमेघैश्च भासते चित्तभास्करः ।
.. .. सहसा कल्पना घटे ॥ ११८ ॥
प्रज्ञया निर्मलः स्वच्छो ज्ञानदीपः प्रकाशते ।
सुप्रसिद्धानि भूतानि क्षित्यम्बिज्वलवायवः ॥ ११९ ॥
क्रियन्ते ह्यन्यथा विज्ञैर्मन्त्रसामर्थ्ययोगतः ।
सर्व्ववादपरित्यज्य ... ... समाचरेत् ॥ १२० ॥
यस्य मन्त्रस्य सामर्थ्यं सूक्ष्मदेवोऽपि सिध्यति ।
स्त्रीरत्नं न परित्याज्यं बोधिचित्तं तथा गुरुम् ॥ १२१ ॥
न ह्यात्मा प्राणिनः केऽपि समयानप्यधिष्ठयेत् ।
महारत्नं सकर्पूरं रक्तचन्दनयोजितम् ॥ १२२ ॥
अलिवघ्यादिकश्चैव पञ्चैतानप्यधिष्ठयेत् ।
अन्यैश्च समयैर्व्यक्तैश्चित्तस्योत्कर्षकारकैः ॥ १२३ ॥
मारुतक्षोभशान्त्यर्थं प्रीणयेच्चित्तवच्चिरम् ।
मक्षिकापदमात्रेण विषेणाप्यभिभूयते ॥ १२४ ॥
अणुमात्रां घृणां लज्जां दूरतः परिवर्ज्जयेत् ।
आन्तरालिकभावस्तु व्यर्थो वै पतनं यथा ॥ १२५ ॥
गुरोराज्ञाश्च मुद्राश्च छायामपि न लङ्घयेत् ।
गुणास्तस्य परं ग्राह्यं दोषा नैव कदाचन ॥ १२६ ॥
भयुद्धं(?) वाचरं विद्वाः स्वपरायतनमेव वा ।
आचार्य्यः परमो देवः पूजनीयः प्रयत्नतः ।
स्वयं वज्रधरो राजा साक्षाद्रूपेण संस्थितः ॥ १२७ ॥
यथोदकमणिः सम्यक् कलुषोदकशोधकः ।
सद्धर्म्मागस्तथा प्रोक्ताश्चित्तरत्नविशोधकः ॥ १२८ ॥
श्रद्धावान् पूज्यते क्वापि प्रज्ञाचक्षुर्विवर्ज्जितः ।
उत्पादयेदतः प्रज्ञामागमाधिगमात्मिकाम् ॥ १२९ ॥
श्राद्धो बहुश्रुतः प्राज्ञो प्रज्ञया करुणात्मकः ।
जगद्दुःखविनाशाय सुखोपायं स विन्दति ॥ १३० ॥
चित्तविशुद्धिमाधाय यन्मयोपार्ज्जितं शुभं ।
चित्तविशुद्धिमाधाय तेनास्तु सुखिनो जनाः ॥
कृतिरियमार्य्यदेवपादानामिति ॥
स्वपरार्थहेतुना खाच्च हरितलेति शुभं मये लिखितम् ।
यथात्मनः प्रियाः प्राणाः सर्व्वेषां प्राणिनान्तथा ।

Note on a Dialect of Gujarātī discovered in the District of Midnapur.—By GEORGE A. GRIERSON, C.I.E., PH.D., I.C.S.

[Read July, 1898.]

Several interesting facts have come to light during the progress of the Linguistic Survey. Amongst them may be mentioned the discovery of a number of people who speak a dialect of Gujarāti in the Dāntan thānā of the Bengal District of Midnapur.

Amongst the languages returned to me as spoken in that District was Siyālgirī. The Siyālgirs are a criminal, nomadic tribe, numbering about 120 souls, who have a language of their own. They are not mentioned by Dalton or by Mr. Risley in their Ethnographical works. This language was unintelligible to the other inhabitants of the District, and was believed "to resemble Santālī." This was an easy supposition to make, as there are some 118,000 Santālis in the District, whose language is equally unintelligible to the multitude.

In order to obtain materials for the second part of the Survey, specimens of every language spoken in each District are being collected. The specimens are all to consist of translations of the Parable of the Prodigal Son, and in order to assist the preparation of these, books of translations of the parable which had been already made into the principal languages of India have been distributed to the translators. Included in these last was a Gujarātī version. In sending the Siyālgirī version to me, the Collector of Midnapur drew attention to the remarkable points of resemblance between it and the Gujarātī version to which I have just alluded. An examination of the Siyālgirī specimen fully justified the Collector's remarks. The very first sentence is almost pure Gujarāti. The resemblance was so unexpected that I thought it advisable to make further enquiries, so as to make sure that the specimen is a genuine one. There can now be no doubt on that point. The translation had originally been obtained through the kind offices of Babu Krishna Kisor Acharji, the Secretary of the Midnapur District Board, and that gentleman has been good enough to send me the following note on the subject.

"A Sub-Inspector of Schools under the District Board was deputed to Dāntan with copies of the English and Bengali versions of the parable of the Prodigal Son, and he got the parable translated into the Siyālgirī dialect with the help of two men belonging to that tribe and of the Sub-Inspector of Police, Dāntan.

These two Siyālgirīs were both by their age and intelligence, best able to translate the parable, and as they could speak both Bengali and Hindī the parable was fully and correctly explained to them before they translated it, and so it is certain that they perfectly understood what they had to translate.

I then went through the translation very carefully, and by comparing it with the specimens of other dialects given in the printed book became convinced that it was altogether a separate dialect resembling Gujarātī.

Neither the Sub-Inspector of Schools nor the Sub-Inspector of Police knows Gujarātī, and I do not think the two Siyālgirīs who translated the parable of the Prodigal Son into the language spoken by them have ever heard of Gujarāt or know anything of Gujarātī.

In these circumstances there is I should think no room for doubt that the specimen sent correctly represents the dialect spoken by the Siyālgirīs.

I have since obtained some additional particulars relating to the Siyālgirīs which I beg to give below with a view to facilitate their identification with any other tribe in India.

Unfortunately there is nothing like tradition prevalent among them as to whence they came and when they came to Dāntan. This is apparently due to their having been a wandering tribe for many generations before they came and settled in this district. People like the Siyālgirīs generally have a short memory, and they do not appear to have any songs or ballads in their language throwing any light on their previous history.

They do not even know whether there are any other sections of their tribe living in any other part of India.

In this district the Siyālgirīs are found in the following villages:—

1. Nimpur.
2. Gōmunda.
3. Lālmōhanpatna.
4. Dhukurda.
5. Saipur.

And also in Suga and Simla in District Balasore.

From the information that I have been able to collect regarding this tribe it would seem that they first appeared in this district about 150 years ago.

During this period both their manners and customs have become thoroughly Hinduised.

They are now divided into four classes:—

1. Jānā.
2. Pātrā or Pātar.
3. Dās.
4. Har.

All these are Hindu patronyms.

How they became so subdivided—either by intermarriage with their Hindu neighbours, or by their desire to raise themselves up to the level of

the latter by assuming their patronyms—is not known. But the contempt with which they are treated by the Hindūs, owing to their thieving propensity, precludes the possibility of intermarriage between these two classes of people. Indeed the name of Siyālgirī has become a bye-word—a term of reproach—and whenever a Hindū takes to thieving as his profession he is said to have turned a Siyālgirī.

The Siyālgirīs have Brāhmaṇs for their priests, and so they have lost all traces of their original religion—if they had any when they first came into the district. These Brāhmaṇs do not appear to have come with them, for most of those who officiate as priests at the religious ceremonies performed by the Siyālgirīs belong to the class of low-caste indigenous Brāhmaṇs, and in society they occupy the same position as the Brāhmaṇs of Muchīs, Chamārs, and other similar castes.

They worship the same gods and goddesses as their Hindū neighbours But their widows remarry and they bury their dead.

They do not appear to have any peculiar custom as to inheritance. As most of them are generally very poor and leave very little property when they die, the Siyālgirīs abide by the decision arrived at by their priests in the event of any dispute arising as to inheritance in any particular case.

I do not think these details will be of any material help in tracing the origin of this tribe whose appearance in Midnapur, occurring at a time beyond the memory of the present generation, cannot be satisfactorily accounted for.

Their features also do not give any clue as to their origin. If they had any peculiarity it has disappeared altogether, and the Siyālgirīs can now be hardly distinguished from ordinary Bengali peasants.

It is therefore through their dialect alone that their origin can now be traced, and it is for these reasons that I give here the Siyālgirī equivalents for "salt" and "curry"—the two most common necessaries of life—which they call मिठु (*miṭhu*=sweet) and खालन् (*Khālan* for Hindi *Sālan*) respectively.

The other peculiarities of their dialect will appear from the specimen already submitted.

An examination of the specimen shows that the language is a variety of the language of the Bhīls. The Bhīls speak a corrupt form of Gujarātī, and Siyālgirī agrees with Bhīlī when it differs from the standard form of that language. Thus, the Gujarātī for "I" is *hū*, but the Bhīlī is *mō*, and the Siyālgirī is *mu*. There are some words which, so far as I am aware, are not in Bhīlī, and which I have been unable to identify as belonging to any known language, Muṇḍā, Dravidian, Tibeto-Burman, or Aryan, of India. Such are *baditheī* meaning "against," *āgā* meaning "father," and *khām-lōyān* "to hear."

I may mention that an excellent grammar and vocabulary of the Bhīl language has been prepared by the Rev. C. S. Thompson.* The

* Ahmadabad, United Printing Press, 1895.

habitat of the Bhīls is to the south of Mēwāṛ, where the Central Provinces, Rajputānā, and Gujarāt meet. As already stated, their language is a dialect of Gujarātī, but, according to Mr. Thompson, there is, in the vocabulary, a substratum, of about six per cent. of words, which, while not corrupted from Gujarātī or Arabic and Persian, have no connexion with the Dravidian Languages of Southern India, or with Gōṇḍī, Santālī, or Kōl. The Siyālgirī seems to have preserved some of these words, which have been lost to Bhīlī. It would be interesting, if possible, to trace the wanderings of this tribe from their original home.

The following is the Siyālgirī version of the Parable of the Prodigal Son:—

एक्	मरद्‌ना	बय	दिक्‌रा	थेर्।	तिन्‌ह	विचे	नान्‌ह
Ēk	*maradnā*	*baya*	*dikrā*	*thēi.*	*Tinha*	*bicē*	*nānha*
A	man-to	two	sons	were.	Their-of	among	(by) younger

दिक्‌रा	आपनु	बाबाने	कहे।	बाब!	मार	हिंच
dikrā	*āpnu*	*bābānē*	*kahē,*	*'bāb!*	*māra*	*hinkṣa*
son	his-own	father-to	it-was-said,	'O-father!	my	share

मार	दे।	इन्‌ह	बभन्	हिंच	आलह	आलह	करि
māra	*dē.*	*Inha*	*babhain*	*hinkṣa*	*ālaha*	*ālaha*	*kari*
me-to	give.'	By him	thereupon	share	separate	separate	having-done

दिध।	थोड़ा	दन्	रहिन्		नान्‌ह	दिक्‌रा
didha.	*Thōṛā*	*dan*	*rahin*		*nānha*	*dikrā*
was-given.	Few	days	remaining	(with his father)	younger	son

आपनु	खब्	हिंच	लेइन्	एग्‌लस्त	पार्‌ह	गिय।	आउर्	तिंथे
āpnu	*khab*	*hinkṣa*	*lēin*	*ēglasta*	*pārha*	*giya.*	*Āur*	*tīthē*
his-own	all	share	taking	distant	country-to	went.	And	there

घनु	खरच्‌पत्र	करिन्	आपनु	खब्	उड़ार
ghanu	*kharach-patra*	*karin*	*āpnu*	*khab*	*uṛāi*
much	expenditure	doing	his-own	all (whole property)	wasting

दिधु।	सो	खब्	खरच्‌पत्र	किधि	तो
didhu.	*Sō*	*khab*	*kharach-patra*	*kidhi*	*tō*
was-given	He	all	expenditure	doing	that
(was thrown away).	(having ran through the whole property)				

देखेहे	बड़ि	आकाल्	पड़ि गिय।	हिय	बड़ि	दुखी
dēkhēhē	*baṛi*	*ākāl*	*paṛi-giya.*	*Hiya*	*baṛi*	*dukhī*
country-in	great	famine	fell.	He	great	distressed

थइ गिय । तिन्ह एलातो जाउ तोच् गामड़ामि एक्
thai-giya. Tinha ēlātō jāu tōc gāmṛāmi ēk
became. He then going that village-inhabiting one

मानखान् हेल झालि रिह । तिन्ह आपनु बिले
mān-khān hēla jhāli riha. Tinha āpnu bilē
man-of-rank shelter taking remained. By him his-own field-in

घुसरि चरान मुक्लि दिध । घुसरि जो बत्रिया खाइन्
ghusri carāna mukli didha Ghusri jō chatriya khāin
swine to-feed sending was-given. Swine what husks were-eating

तो देइन् आपना पेट् भराउँ खोंजे तिन्हे
tō dēin āpnā pēṭ bharaū khōjē. Tinhē
those giving his-own belly to-fill it-was-sought. Him-to

किन्ह दिधु कोनि । पाछु खाक्हाउन् तिन्ह
kinha didhu kōni. Pāchu khāk-hāun tinha
by-any-one was-given not. Afterwards being-awakened by-him

कहुँ । मार बाबान् केट्ला झाना दर्मो-पाउन् चाकेर्
kahũ, 'māra bābān kēṭlā jhānā darmō-pāun cākēr
it-was-said, 'my father-of how-many men wage-getting Servant

दर्कार घनु छेय खादु पाँवे । आ मु ह्याँखे भूँखे
darkār ghanu chēya khādu pāvē, ā mu hyākhē bhūkhē
need more than food get, And I here of-hunger

मरु । मु हाँत उठिन् मार आगाकेने पर्हे जाँउ ।
maru. Mu hāta uṭhin māra āgākēnē parhā jāu.
am-dying. I from-here rising my father-of in-vicinity will-go.

तिन्ह कहिस् बाब्! मु गोखाँइ बदिथेइ तुँउ आगल्
Tinha kahis, "bāb! mu gōkhāi badithēi tūhu āgal
To-him will-say, "father! by-me God against thy before

पाप् किधु । मु आउ तार् दिक्रा बुलि ओलखि
pāp kidhu. Mu āu tār dikrā buli ōlakhi
sin has-been-done. I again thy son being-called described

पारिस् कोनि । मिन्हे तु एक् दर्मो-पाउन चाकेर् करि
pāris kōni. Minhē tu ēk darmō-pāun cākēr kari
will-be-able not. Me-to thou a wage-getting servant making

राख् । पाछु तिन्ह उठिन् आपनु आगाकेने गिय ।
rākh." 'Pāchu tinha uṭhin āpnu āgākēnē giya.
keep." 'Afterwards he having-risen his-own father-to went.

तिन्ह	एग्लसे	रहे	तेक्रा	आगा	जोवान	पावे ।
Tinha	*ēglastē*	*rahē*	*tēkrā*	*āgā*	*jōwān*	*pāwē.*
Him	at-distance	remaining	by-his	father	to-see	it-was-got.

इन्ह	दयाबहि	लासिन्	जाइन् ।	उण्डेल्मे
Inha	*dayābahi*	*lāsin*	*jāin,*	*uṇḍēl-mē*
By-him	being-kind (affectionate)	running	going,	by-the-neck

लेइन ।	बुचड़ा	दिधा ।	दिक्रा	तिन्हे	कहँ,
lēin,	*bucṛā*	*didhā.*	*Dikrā*	*tinhē*	*kahũ,*
taking,	kisses	were-given.	By-the-son	him to	it-was-said,

बाब !	आउ	गोखाँइ	बदिथेइ	तेरा	आगल्	पाप्	किधु ।
'bāb!	*āu*	*gōkhãi*	*badithēi*	*tērā*	*āgal*	*pāp*	*kidhu.*
'O-father!	by-me	God	against	thy	before	sin	has-been-done.

मु	आउर्	तार्	दिक्रा	बुलि	ओलखि	पारिस्	कोनि ।
mu	*āur*	*tār*	*dikrā*	*buli*	*ōlakhi*	*pāris*	*kōni.'*
I	again	thy	son	being-called	described	will-be-able	not.'

बाब्	आपना	चाकेर्ने	कहँ,	हेलु	आउ	लुकड़ा
Bāb	*āpnā*	*cākērnē*	*kahũ,*	*'hēlu*	*khāu*	*lukṛā*
By-the-father	his-own	servant-to	it-was-said,	'soon	good	cloth

लि	आइन्	इन्हे	परादहा	दे ।	इन्हा	आते	इंटी
li	*āin*	*inhē*	*parādihā*	*dē.*	*Inhā*	*hātē*	*ṭi*
taking	bringing	him-to	put-on	give.	His	hand-to	ring

आउर्	गोड़े	आम्ड़ा	दे ।	हेमे	इन्हे	लेइन्	आदु-आउन्
āur	*gōṛē*	*khāmṛā*	*dē.*	*Hēmē*	*inhē*	*lēin*	*khādu-khāun*
and	feet-to	shoes	give.	(Let)-us	him-to	taking	dinner-eating

खुसी	रहिन्	जेसों	मार	दिक्रा	मरि गिय	जीवत्	थाइन्
khusī	*rahin.*	*Jēsõ*	*māra*	*dikrā*	*mari-giya,*	*jīvat*	*thāin;*
merry	remain.	For	my	son	dead-went (was),	alive	is.;

आजि गियत	पाओत	लायहा ।	तार् बाद्	खुसी	थायन्
hāji giyata	*pāota*	*lāyaha.'*	*Tār bād*	*khusī*	*thāyan*
lost-went (was)	found	has-been.'	After this	in-happiness	to-remain

लागा ।
lāgā.
began.

तिन्ह	मोटो	दिक्रा	बिल्मो	हत ।	मो	आउन्	घिरे
Tinha	*mōṭō*	*dikra*	*bilmō*	*huta.*	*Tō*	*āun*	*ghirē*
His	elder	son	field-in	was.	By-him	coming	house-to

नाचु	बाजनु	खाम्-लोयान	पाउँ।	तब्	तिन्ह	एक्	चाकेर्नै
lācu	*bājnu*	*khām-lōyān*	*pāū.*	*Tab*	*tinha*	*ēk*	*cākērnē*
dancing	music	to-hear	was-got.	Then	by-him	a	servant-to

कान्हे	बोलायन्	पुछु,	'आ	खब्	खुँ।	सो
kānhē	*bōlāyin*	*puchu,*	*'ā*	*khab*	*khū,'*	*Sō*
near	calling	it-was-asked,	'this	all	what (is),'	By him

इन्हे	कहुँ,	'तार्	भाइय	आव	तार्	आगा
inhē	*kahū,*	*'tār*	*bhāiya*	*āwa*	*tār*	*āgā*
him-to	it-was-said,	'thy	brother	having-come	(by)-thy	father

खाउ	खादु	तैयार्	किधु,		किन्से	तिन्ह	तिन्हे
khāu	*khādu*	*taiyār*	*kidhu,*		*kinsē*	*tinha*	*tinhē*
dinner		preparation has-been-done,			because	by him	him-to

has been prepared

खुँथिउ-खाउ	जोवान्	पाउँ।	तिन्ह	रिग्	किध।	
khūthiu-khāu	*jōwān*	*pāū.'*	*Tinha*	*rig*	*kidhu.*	
in-healthy-state	to-see	it-has-been got.'	By him	anger	was-done.	

घर्मिको	जाइ	कोनि।	पाछु	तिन्ह	आगा	बाहार्
Gharmikō	*jāi*	*kōni.*	*Pāchu*	*tinha*	*āgā*	*bāhār*
House-to	went	not.	Afterwards	(by) his	father	out-side

आउन्।	बुझाइन्		किधु।	सो	जवाब्	कर्के	आपना
āun	*bujhāin*		*kidhu.*	*Sō*	*jawāb*	*karkē*	*āpnā*
coming	consoling (him)		was-done.	He	answer	making	his-own

आगानै	कहे,	एत्ना	बरख्-से	तारि	सेवा	करु।
āgānē	*kahē,*	*'ētnā*	*barakh-sē*	*tāri*	*sēbā*	*karu.*
father-to	says,	'so many	years-from	thy	service	has-been-done.

तारि	आत्	केदे	पर्धिकोला	कोनि।	तो	तु	मन्हे
tāri	*āt*	*kēdē*	*parhikōlā*	*kōni.*	*Tō*	*tu*	*manhē*
thy	word	at-any-time	been-disobeyed	not.	Still	thou	me-to

केदे	एक्	बक्रिनु	चेलिउको	देइनि,	जो	मारु	
kēdē	*ēk*	*bakrinu*	*cēliukō*	*dēi-ni,*	*jō*	*māru*	
at any time	a	goat-of	kid-to	give-not,	so that	my	

बँधुने	लेइन्	हेँखे।		तार्	एहि	दिक्रा
bādhunē	*lēin*	*hēkhē.*		*Tār*	*ēhi*	*dikrā*
friends-to	taking	(we)-may-make-merry.		Thy	this	son

जो	कहबिन्	खाते	रहिन्	तार्	खाब्ज	खादु।	हिय
jō	*kahabin*	*khātē*	*rahin*	*tār*	*khābja*	*khādu,*	*hiya*
by-whom	harlots	with	remaining	thy	property	eaten-up,	he

जब्	आव	तु	इनिगुड़िये	खादुखाउ	तैयार्	किधु।
jab	*āwa*	*tu*	*ini-guṛiyē*	*khādu-khāu*	*taiyār*	*kidhu.'*
when	came	by-thee	for-him	dinner	prepared	was-made.'

सो	तिन्हे	कऊँ,	दिक्रा	तु	मार्	बरोब्बर्	रह।
Sō	*tinhē*	*kahū,*	*'dikrā*	*tu*	*mār*	*barobbar*	*raha.*
By him	him-to	it-was-said,	'O-son	thou	my	always	art.

मारु	जट्लु	था	सो	खब्	तारु।	खुसी
Māru	*jēṭlu*	*thā*	*sō*	*khab*	*tāru.*	*Khusī*
My	all-that	is	it	all	(is) thine.	(Being) merry (for his return)

जाइन्	रिह।	तार्	एयब्	भाइय	मरि	गियत	जीवत्	थाइन्
jāin	*riha.*	*Tār*	*ēyab*	*bhāiya*	*mari*	*giyata,*	*jībat*	*thāin*
right	is.	Thy	this	brother	dead	went (was),	alive	being

आव,	हाजि	गियत	पाँव
āwa;	*hāji*	*giyata,*	*pā̃wa.'*
has-come;	lost	went (was),	has-been-found.'

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PLATE I, REVERSE.

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SCALE

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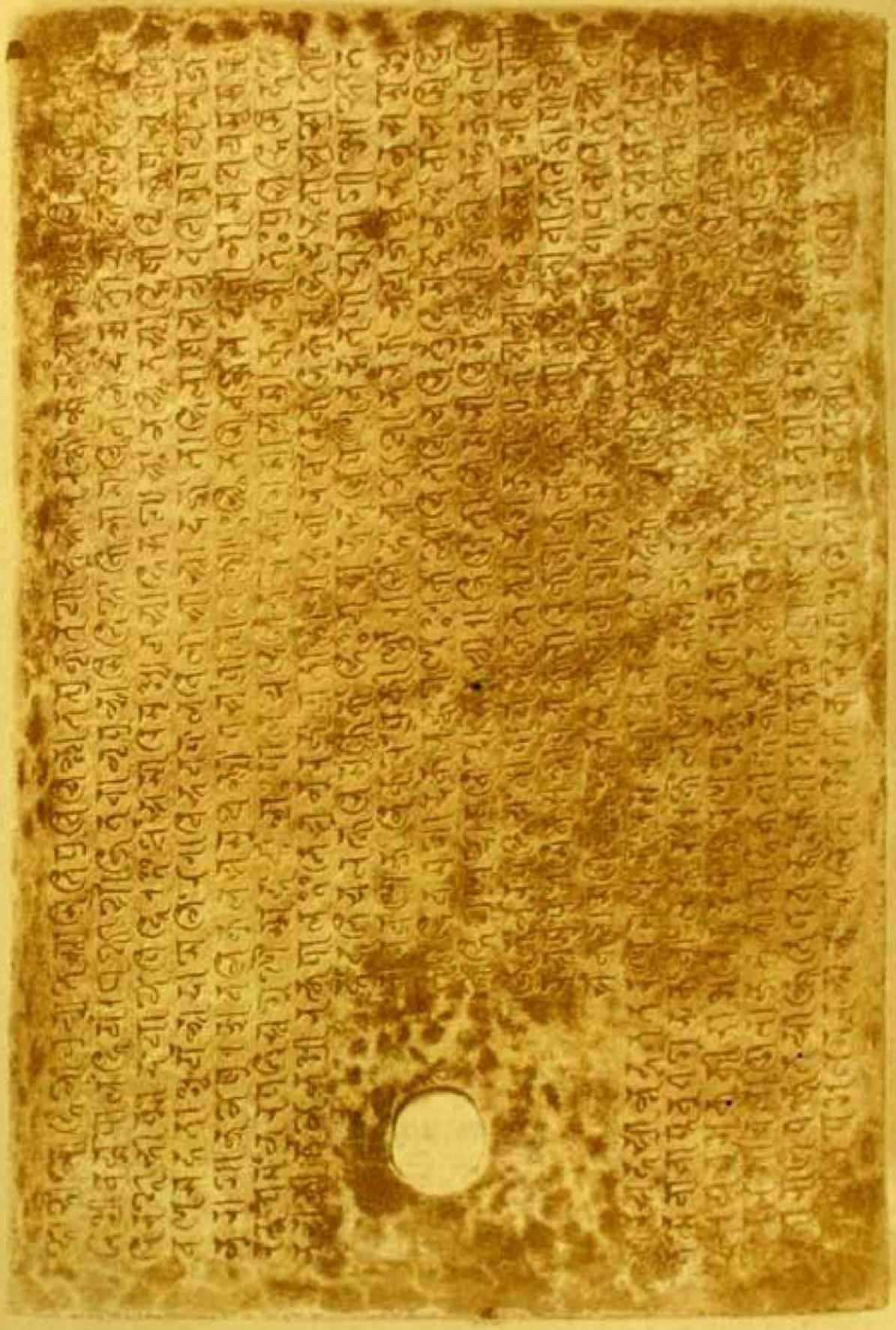

A DEVA OF PRÂGJYOTISA, (UNDATED).

Survey of India Office, Calcutta, April 1938.

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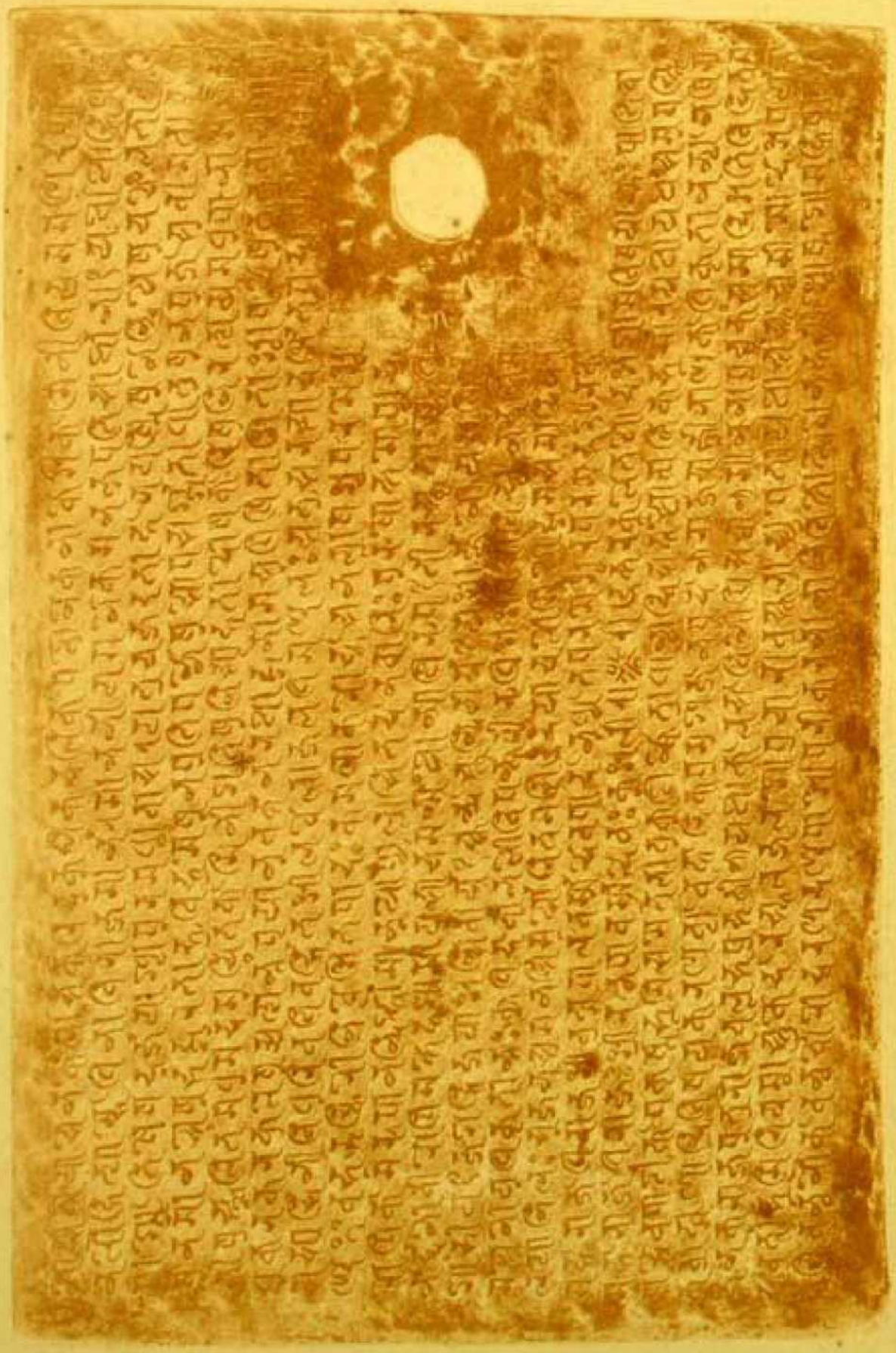
PLATE II. REVERSE.



38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57

COPPER-PLATE GRANT OF RATNAPÂLA V.

(SCA

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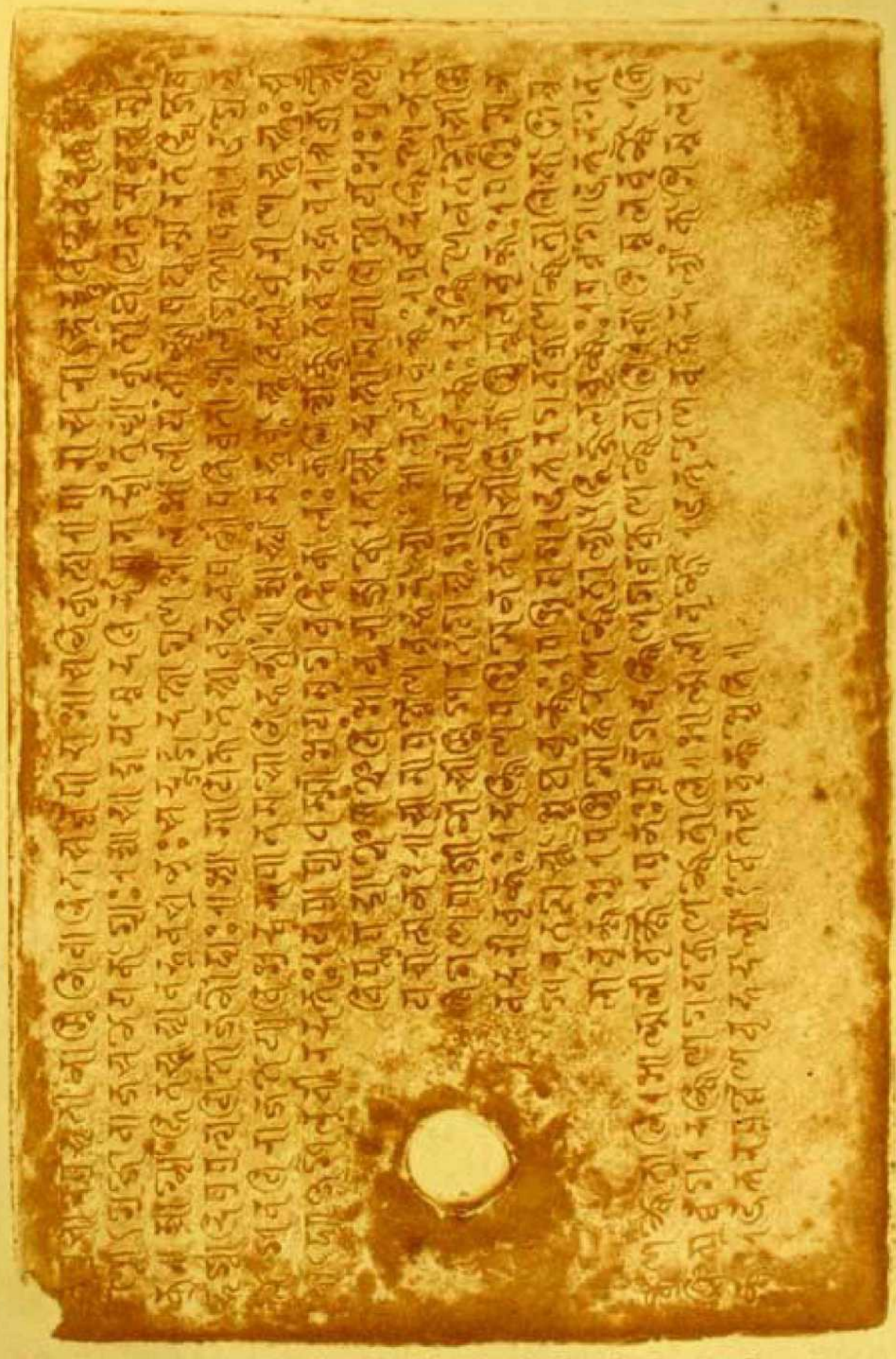

58 59 60 61 62 63 64 65 66 67 68 69 70 71 72

ARMA DĒVA OF PRĀGJYOTIṢA, (UNDATED).

Survey of India Offices, Calcutta, April 1898.

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COPPER-PLATE GRANT OF RATNAPĀLA. THE SEAL.

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COPPER-PLATE GRANT OF RATNAPĀLA OF PRĀGJYŌTISA ĀSĀM.

PLATE XII

Survey of India Offices, Calcutta, May 1897.

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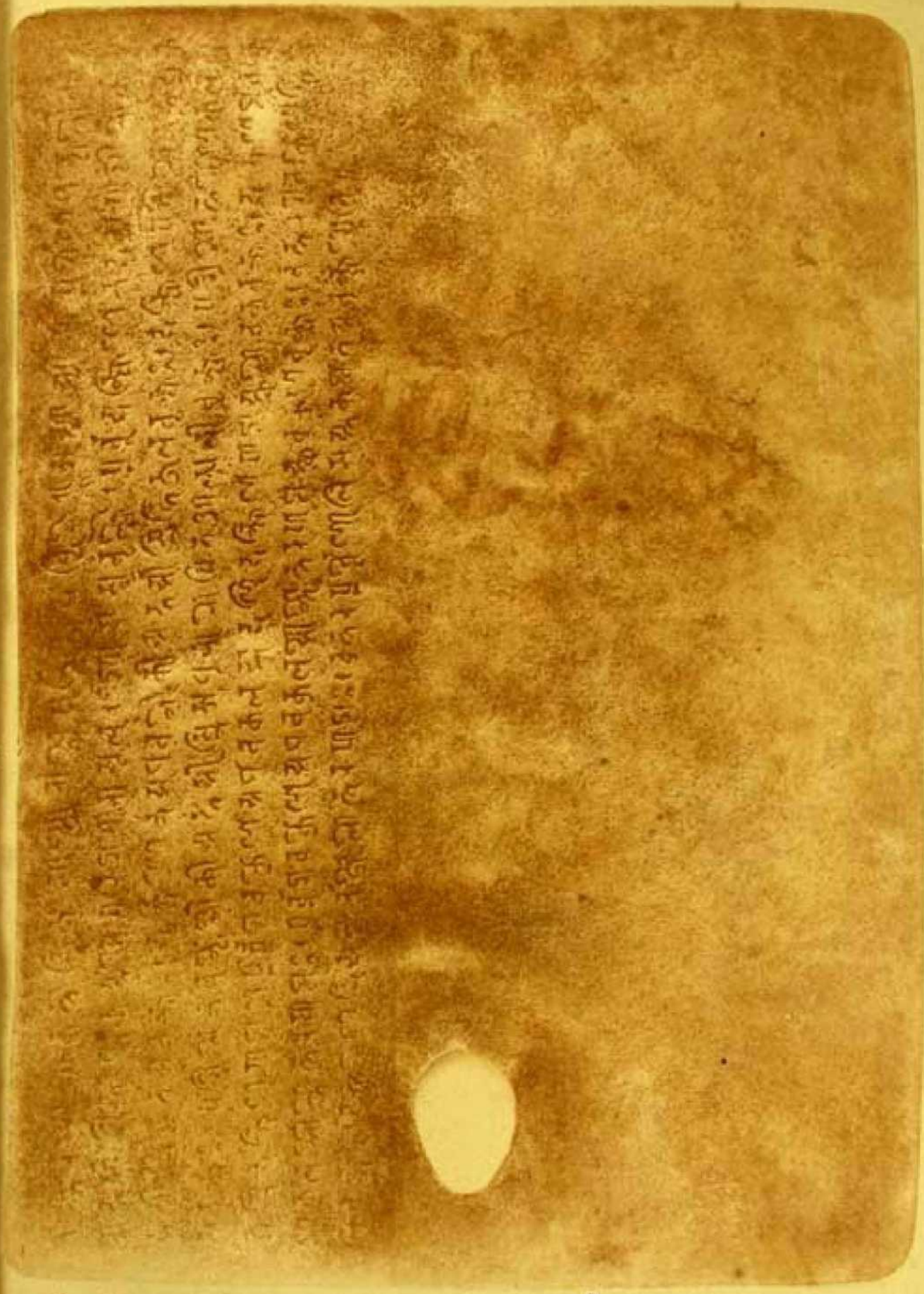
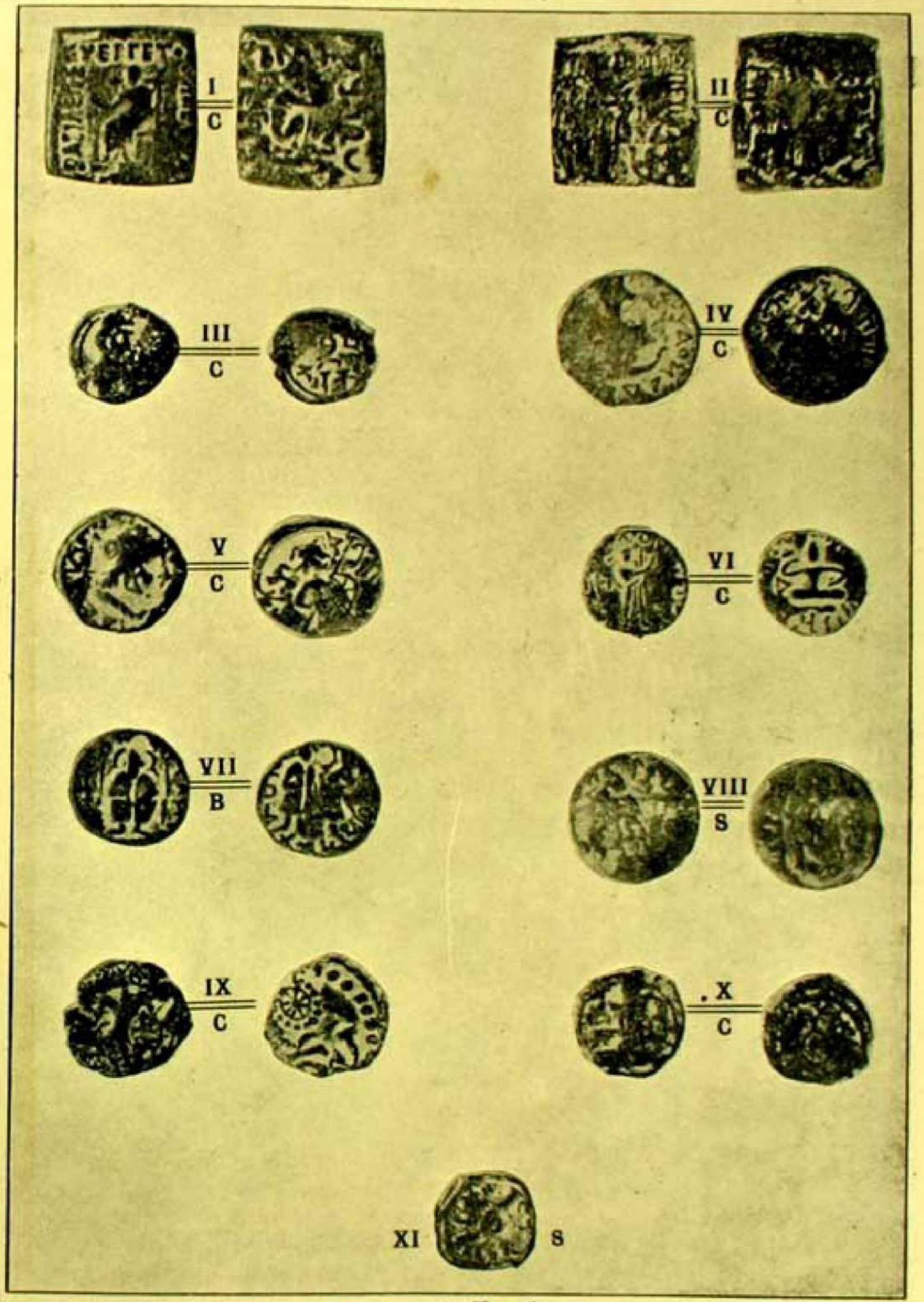


PĀLA OF PRĀGJYŌTISA ĀSĀM.

Survey of India Offices, Calcutta, May 1897.



Numismatic Novelties.

Under orders of the Council the following system of transliteration will be adopted for the future in all publications of the Society. Authors of papers for the *Journal*, Pt. I, are particularly requested to adhere to it in their contributions.

A. FOR THE DĒVANĀGARĪ ALPHABET, AND FOR ALL ALPHABETS RELATED TO IT.

अ *a*, आ *ā*, इ *i*, ई *ī*, उ *u*, ऊ *ū*, ऋ *ṛ*, ॠ *ṝ*, ऌ *ḷ*, ए *e*, ऐ *ai*,
ओ *o*, औ *ō*, ऐ *ai*, औ *au*, ं *ṁ*, ँ ~ : *ḥ*

क *k*,	ख *kh*,	ग *g*,	घ *gh*,	ङ *ṅ*
च *c*,	छ *ch*,	ज *j*,	झ *jh*,	ञ *ñ*
ट *ṭ*,	ठ *ṭh*,	ड *ḍ*,	ढ *ḍh*,	ण *ṇ*
त *t*,	थ *th*,	द *d*,	ध *dh*,	न *n*
प *p*,	फ *ph*,	ब *b*,	भ *bh*,	म *m*
य *y*,	र *r*,	ल *l*,	व *v*,	(ळ *ḷ*)
श *ś*,	ष *ṣ*,	स *s*,	ह *h*.	

In the above the *virāma* has been omitted for the sake of clearness.

In Modern Vernaculars only; ऋ may be represented by *ṛ*, and ढ़ by *rh*.

Avagraha is to be represented by an apostrophe, thus सो ऽपि *sō 'pi*. *Visarga* is represented by *ḥ*, *Jihvāmūlīya* by *ḫ*, and *Upadhmānīya* by *ḫ*. *Anusvāra* is represented by *ṁ*, thus संसर्ग *saṁsarga*, and *anunāsika* by the sign ~ over the letter nasalized, thus चँ *ā*, चाँ *ā̃*, and so on. The *udātta* accent is represented by the sign ' and the *svarita* by ^. Thus, अग्निः *agníḥ*, जनि॒ता *janitā́*, क्वा *kvâ*, कन्या॑ *kanyā́*. The *anudātta* accent may be represented by `. Thus, ते अवर्धन्त *tḗ àvardhanta*.

B. FOR PERSIAN (INCLUDING ARABIC WORDS IN PERSIAN) AND HINDŪSTĀNĪ.

(*The system is not applicable to Arabic when pronounced as in Arabic-speaking countries*) :—

Vowels.	Consonants.	Sounds only found in Hindūstānī.
اَ a	ب b	بھ bh
آ ā	پ p	پھ ph
اِ i	ت t	تھ th
اِی ī		ٹ ṭ
اے ē		ٹھ ṭh
اُ u	ث s	
اُو ū	ج j	جھ jh
او ō	چ c	چھ ch

Vowels.		Consonants.		Sounds only found in Hindūstānī.	
اَیْ	ai	ح	ḥ		
اَوْ	au	خ	kh		
		د	d	ڈ	ḍ
				ڈھ	ḍh
				ڑ	ṛ
				ڑھ	ṛh
		ذ	z		
		ر	r		
		ز	z		
		ژ	zh		
		س	s		
		ش	sh		
		ص	ṣ		
		ض	ẓ		
		ط	ṭ		
		ظ	ẓ		
		ع	ʿ		
		غ	gh		
		ف	f		
		ق	q		
		ک	k	کھ	kh
		گ	g	گھ	gh
		ل	l		
		م	m		
		ن	n		
		ں	when representing *anunāsika* in Dēva Nāgarī, by ˜ on the preceding vowel		
		و	w (or rarely v)		
		ہ	h		
		ی	y		
		Hamzah	ʾ (where necessary)		

The ل of the article ال in Arabic words should be assimilated before the solar letters; and the vowel *u* which often precedes the article and absorbs its vowel should remain attached to the word to which it belongs. Thus—اقبال الدولہ Iqbālu-d-daulah.

Tanwīn may be rendered by *n*—e. g., *ittifāqan*. *Alif-i maqṣūrah* should be rendered by *ā*.

Final ہ need not be written in Persian and Hindūstānī words, but should be written in Arabic words.

On Primary Suffixes in Kāçmīrī.—*By* G. A. Grierson, C.I.E., Ph.D., I.C.S.

[Read August, 1898.]

These are treated in the *Kṛdanta-prakriyā* of Içvara-kaula's *Kaçmīra-çabdāmṛta*. They form nouns (including adjectives and participles) by direct accretion to verbal roots. Many of them would be properly classed as verbal forms.

1. आन् *ān*. This is used to make present participles. It does not change for gender or number, and is added direct to the root (ix. i. 2).[1] Thus,—

Root.	Present Participle.
कर *kar*, do.	करान् *karān*, doing.
बोज़ *bōz*, hear.	बोज़ान् *bōzān*, hearing.

If the root ends in a vowel, the letter व *w* is inserted (3). Thus,—

दि *di*, give.	दिवान् *diwān*, giving.
खि *khi*, eat.	ख्यवान् *khyawān*, eating.
चि *ci*, drink.	च्यवान् *cyawān*, drinking.

Note that all verbs ending in इ *i* change इ *i* to य *ya*, except नि *ni*, take, दि *di*, give, यि *yi*, come.

This form is frequently used adverbially (4). Thus परान् परान्, कंरन् *parān, parān, kạrun*, coming, coming, he made it.

This form corresponds to the Sanskrit present participle.

2. इथ् *ith*. Used to form a past participle absolute or conjunctive participle, corresponding to the Sanskrit conjunctive participle in त्वा *tvā*, or य *ya* (त्य *tya*). Thus,—

कर *kar*, do.	करिथ् *karith*, having made.

[1] References, here, and elsewhere, to Içvara-kaula's *Kaçmīra-çabdāmṛta*.

A preceding long आ *ā* (not short अ *a*) is modified. Thus,—

दार *dār*, place. दारिथ् *dāṛith*.

ओ *ō* and ए *ē* become ऊ *ū* and ई *ī* respectively before this prefix (14,15). Thus,—

बोज़ *bōz*, hear. बूज़िथ् *būzith*, having heard.

मेन् *mēn*, measure. मीनिथ् *mīnith*, having measured.

If a root ends in इ *i*, the final इ *i*, together with the suffix become यथ् *yăth* (ix. i. 7, 8). Thus,—

हि *hi*, take. ह्यथ् *hyăth*, having taken.

खि *khi*, eat. ख्यथ् *khyăth*, having eaten.

Exceptions are—

नि *ni*, take. निथ् *nith*, having taken.

यि *di*, give. यिथ् *dith*, having given.

दि *yi*, come. दिथ् *yith*, having come.

When the root वुड *wuḍ*, fly, signifies *mōkṣa*, final release, it becomes वुजिथ् *wujith*, having obtained final release; but वुडिथ् *wuḍith*, having flown (ix. i. 9).

The root मंज़्राव *maṣ°rāv*, cause to forget, usually forms मंज़्रावियथ् *maṣ°rāvith*, regularly, but in the phrase 'to cause to forget death,' it becomes मासवियथ् *māṣawith*. Thus,—

मरन् मासवियथ् *marun māṣawith*, having caused (so and so) to forget death (ix. i. 10).

The suffix क्यथ् *kyăth*, may be added to this form. Thus, करिथ् क्यथ् *karith kyăth*, having done (ix. i. 6).

3. इ *i* (ix. i. 11–15). This is used instead of इथ् *ith*, when the word is repeated to represent frequentative action. In this case both a preceding अ *a* and a preceding आ *a* are modified. Thus,—

कर *kar*, do. कंरि कंरि *kaṛi kaṛi*, having made over and over again.

मार *mār*, beat. मांरि मांरि *māṛi māṛi*, having beaten repeatedly.

कार *kār*, boil. कांरि कांरि *kāṛi kāṛi*, having boiled repeatedly.

As in the case of इथ् *ith*, preceding ए *ē* and ओ *ō* become ई *ī* and ऊ *ū* respectively. Thus,—

च़ेट *tsēṭ*, pound.	च़ीटि च़ीटि *tsīṭ*^{i} *tsīṭ*^{i}, having pounded continually.
बोज़ *bōz*, hear.	बूज़ि बूज़ि *būz*^{i} *būz*^{i}, having heard continually.

So also we have—

ब्यह *bĕh*, sit.	बिहि बिहि *bih*^{i} *bih*^{i}, having sat continually.

When a root ends in इ *i*, the final vowel together with the suffix become य *ya* (*ĕ*); or the form in थ् *th* may be used (12). Thus,—

खि *khi*, eat.	ख्य ख्य *khĕ khĕ* or ख्यथ् ख्यथ् *khyăth khyăth*, having eaten frequently.
चि *ci*, drink.	च्य च्य *cĕ cĕ* or च्यथ् च्यथ् *cyăth cyăth*, having drunk frequently.

Exceptions are, as usual,—

नि *ni*, take.	नि नि *ni ni* or निथ् निथ् *nith nith*, having taken frequently.
दि *di*, give.	दि दि *di di* or दिथ् दिथ् *dith dith*, having given frequently.
यि *yi*, come.	यि यि *yi yi* or यिथ् यिथ् *yith yith*, having come frequently.

4. वुनु *wun*^{u} (fem. व॑ञ् *wạñ*; plur. masc. व॑नि *wạn*^{i}, fem. वञ *wañē*) used to form nouns of agency (ix. i. 25–27). Thus,—

कर *kar*, make.	करवुनु *karawun*^{u}, a maker.

If a root ends in इ *i*, अव *aw* is inserted and the इ *i* changed to य *y*. Thus,—

खि *khi*, eat.	ख्यववुनु *khyawawun*^{u}.
चि *ci*, drink.	च्यववुनु *cyawawun*^{u}.

Exceptions are,—

नि *ni*, take.	निववुनु *niwawun*^{u}.
दि *di*, give.	दिववुनु *diwawun*^{u}.
यि *yi*, come.	यिववुनु *yiwawun*^{u}.

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5. वोलु *wōl*^{u}, (fem. वाज्यञ् *wājĕñ*; plur. masc. वा॑लि *wạ̄l*^{i}, fem. वाज्यञ *wājĕñĕ*) is also used to form nouns of agency. For examples, see below (ix. i. 28-31).

6. ग्राख् *grākh* (fem. ग्राक॑ञ् *grākạñ*, *vide ante*, p. 34). Also used to form nouns of agency (ix. i. 28-31).

These two last suffixes are really secondary ones, (see Sec. Suff. No. 9, 10). They are added to abstract verbal nouns, especially to that in उन् *un* (No. 16), the उन् *un* being changed to अन् *an*. Thus,—

कर *kar*, make.	करुन् *karun*, making.	करन्वोलु *karanwōl*^{u}, or करन्ग्राख् *karangrākh*, a maker.
पर *par*, read.	परुन् *parun*, reading.	परन्वोलु *paranwōl*^{u}, or परन्ग्राख् *parangrākh*.

If the abstract noun is feminine (see No. 31*m*) and ends in न् *n*, that न् *n* is changed to ञ़ू *ñ*^{ū} or ञ् *ñ*.

ज़ान *zān*, (31*m*) know. *zān* (fem.) or ज़ानुन् *zānun* (masc.) knowledge.	ज़ान्	ज़ा॑ञ़ूवोलु (ज़ा॑ञ्वोलु) *zạ̄ñ*^{ū}*wōl*^{u} *zạ̄ñwōl*^{u}) or ज़ानन्वोलु *zānanwōl*^{u}, or ज़ा॑ञ़ूग्राख् *zạ̄ñ*^{ū}*grākh*, (ज़ा॑ञ्ग्राख् *zạ̄ñgrākh*), or ज़ानन्ग्राख् *zānangrākh*, a knower.

These two suffixes can only be used with feminine abstract nouns when the verb expresses a condition of the body or mind. Thus ज़ान *zān*, know, expresses a condition of the mind, and therefore we can say जा॑ञ्वोलु *zạ̄ñwōl*^{u}. But the verb ग्रज़् *graz*, roar, which also has a feminine abstract noun (see No. 31*g*.) ग्रज़् *graz*, cannot form ग्रज़्वोलु *grazwōl*^{u}, because the verb does not express a condition of the mind or body. We can only use the masculine abstract noun, thus, ग्रज़न्वोलु *grazanwōl*^{u}.

If a root ends in इ *i*, the इ *i* becomes य् *y* before अन् *an*, and अन् *an* becomes अन *ana*. Thus,—

खि *khi*, eat.	ख्यनवोलु *khyanawōl*^{u}, ख्यनग्राख् *khyanagrākh*, } an eater.
चि *ci*, drink.	च्यनवोलु *cyanawōl*^{u}, a drinker.

Exceptions are,—

नि *ni*, take.	निनवोलु *ninawōl*ᵘ, or निनग्राख् *ninagrākh*, a taker.
दि *di*, give.	दिनवोलु *dinawōl*ᵘ, &c., a giver.
यि *yi*, come.	यिनवोलु *yinawōl*ᵘ, &c., a comer.

7. नल् *nal.*

8. लल् *lal.*

9. अल् *al*, ल् *l.*

These three are used as follows with the roots दि *di* and दाव *dāv* in special senses, all obscene. Thus,—

दिनल् *dinal*, an unchaste woman.

माज्यदिनल् *mājĕdinal*, "*mātṛgāmī*;" ब्यञ़दिनल् *bĕñĕdinal*, "*svasṛgāmī*," कोरिदिनल् *kōridinal*, "*kanyāgāmī*."

माज्यदिलल् *mājĕdilal*, "*mātṛgāmī*."

दावल् *dāwal*, an unchaste woman.

माज्यदावल् *mājĕdāwal*, "*mātṛgāmī*;" ब्यञ़दावल् *bĕñĕdāwal*, "*svasṛgāmī*;" कोरिदावल् *kōridāwal*, &c.

माज्यदिल् *mājĕdil*, "*mātṛgāmī*," &c. (ix. i. 32–35).

10. उ् ᵘ (fem. ऊ् ᵘ̄; plur. masc. इ् ⁱ, fem. य ĕ). This is the termination of past participles. This form is now, however, always used as a past tense, and the true participle is described later on (No. 12) (ix. i. 36–39). Examples are,—

कर *kar*, make.	क॑रु् *kạr*ᵘ, (it was) made.
पर *par*, read.	प॑रु् *pạr*ᵘ, (it was) read.
खन *khan*, dig.	ख॑नु् *khạn*ᵘ, (it was) dug.

This suffix is added to all transitive and impersonal verbs (*i. e.*, verbs of the first conjugation), and, as a verbal form, is used when the logical subject (in the case of the agent) is in the first or third person.

It cannot be used when it is in the second person. Thus, क॑रु् *kạr*ᵘ may mean, 'it was done by me,' or 'it was done by him,' but cannot mean 'it was done by you.' So अ॑सु् *ạs*ᵘ, it-was-laughed by me or by him.

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In the case of Intransitive Verbs, it follows the conjugation of these verbs, and is only used in the case of those verbs which are known as "Listed Verbs" (*vide* A List of Kāçmīrī Verbs, *ante*, Vol. LXV, Part I, page 306). These I shall in future call verbs of the second conjugation. It is then used only in the 3rd person. Thus,—

च़ल *tsal*, flee. च़ॖलु *tsạl*^{u}, he fled.

Non-listed Intransitive Verbs, which I shall in future call verbs of the third conjugation, do not use this form in उ ^{u}, but take the Aorist form in औव् *auv*, or ओव् *ōv*, used in their case for the Past third person sing. Thus,—

व्यठ *vyaṭh*, be fat. व्यठ्यौव् *vyaṭhyauv*, (not व्यॖठु *vyạṭh*^{u}), he was fat.

The final व् *v* is dropped before suffixes, and we thus get व्यठ्यौस् *vyaṭhyau-s*, I was fat.

The following verbs are irregular (ix. i. 37, 38),—

चि *ci*, drink, makes च्यौव् *cyauv* (it was) drunk.

खि *khi*, eat, ख्यौव् *khyauv* (it was) eaten.

नि *ni*, take, न्यूव् *nyūv* (it was) taken.

Besides this there are other irregular forms, such as द्युतु *dyut*^{u}, from √ *di*, 'give'; which will be subsequently described under the head of verbs.

This suffix, उ ^{u}, is frequently met in other nouns, which are not verbal forms, *e.g.*, व्यॖठु *vyạṭh*^{u}, fat.

11. औव् *auv*, or ओव् *ōv* (fem. एय *ēy*^{a}; plur. masc. एय् *ēy*, fem. एय *ēy*^{a}).

This is the termination of the Aorist Participle of verbs of the first and second conjugations, and of the Past Participle of verbs of the third conjugation. As regards its use, see No. 10. The final व् *v* and य् *y* are omitted before suffixes. The form is an old past participle, and can be used with all verbs.

12. मॖतु *mạt*^{u} (fem. मॖच़ू *mạts*^{u}; plur. masc. मॖति *mạt*^{i}, fem. मच़ *mats*^{a}). This is used to form the true Past Participle. It is compounded with No. 11, in the case of verbs of the first and second conjugations

and with No. 12 in the case of verbs of the third conjugation, and both members of the compound change for gender, number and case.

The word is also written and pronounced सुत् *mut*ª, (fem. मच् *maʦ*ª; plur. masc. मति *mat*ⁱ, fem. मत्स *maʦ*ª) (ix. i. 40).

Examples of the use of this participle are,—

A. First Conjugation. (Form 10).

कर्मत् *kar*ª*mat*ª, or कर्मुत् *kar*ª*mut*ª, made.

Singular.

	Masc.	Fem.
Nom	कर्मत् *kar*ª*mat*ª.	कर्मच् *kar*ª*maʦ*ª.
Acc.	करिमतिस् *kar*ⁱ*matis*.	करॅमत्सॅ *karĕmaʦsĕ*.
Ag.	करिमति *kar*ⁱ*mat*ⁱ.	करिमत्सि *karimaʦsi*.

Plural.

	Masc.	Fem.
Nom.	करिमति *kar*ⁱ*mat*ⁱ.	करॅमत्स *karĕmaʦ*ª.
Acc.	करिमत्यन् *kar*ⁱ*matyan*.	करॅमत्सन् *karĕmaʦan*.
Ag.	करिमत्यो *kar*ⁱ*matyau*.	करॅमत्सो *karĕmaʦau*.

Note,—1. The irregular declension of the first half of the compound.

2. The feminine termination of the singular, मत्सॅ *maʦsĕ*. We should (according to iv. 51) except मत्स *maʦ*ª, but my paṇḍit assures me that मत्सॅ *maʦsĕ* is the correct form. Compare p. 59, ante.

The above declension is as given by my paṇḍit, and is not given by Ī-k.

B. Second Conjugation. (Form 10).

त्रलुमत् *ʦal*ª*mat*ª, or त्रलुमुत् *ʦal*ª*mut*ª, fled.

Sing. Masc. त्रलुमत् *ʦal*ª*mat*ª.

Fem. त्रजमच् *ʦaj*ª*maʦ*ª (*vide ante*, pp. 32, 33).

Plur. Masc. त्रलिमति *ʦal*ⁱ*mat*ⁱ.

Fem. त्रज्यमत्स *ʦajĕmaʦ*ª.

C. Third Conjugation. (Form 11).

Singular.

	Masc.	Fem.
Nom.	ꕥꕚꕮꕴꕢꕥꕶ *vyaṭhyōmaṭ*ª.	ꕥꕚꕮꕴꕢꕥꕶꕘ *vyaṭhyēmaṭṣ*ª.
Acc.	ꕥꕚꕮꕢꕥꕚꕳ *vyaṭhyēmatis.*	ꕥꕚꕮꕢꕥꕘ *vyaṭhyēmaṭṣĕ.*
Ag.	ꕥꕚꕮꕴꕢꕥꕶꕢꕚ *vyaṭhyēmaṭⁱ.*	ꕥꕚꕮꕢꕥꕘꕚ *vyaṭhyēmaṭṣi.*

Plural.

	Masc.	Fem.
Nom.	ꕥꕚꕮꕴꕢꕥꕶꕢꕚ *vyaṭhyēmaṭⁱ.*	ꕥꕚꕮꕢꕥꕘ *vyaṭhyēmaṭṣª.*
Acc.	ꕥꕚꕮꕢꕥꕚꕶꕤ *vyaṭhyēmatyan.*	ꕥꕚꕮꕢꕥꕘꕤ *vyaṭhyēmaṭṣan.*
Ag.	ꕥꕚꕮꕢꕥꕚꕶꕮ *vyaṭhyēmatyau.*	ꕥꕚꕮꕢꕥꕘꕮ *vyaṭhyēmaṭṣau.*

The following forms are irregular :—

From	Past Participle.
ꕚ *yi*, come.	ꕄꕢꕥꕶ *āmaṭ*ª.
ꕄꕘ *aṭṣ*, enter.	ꕘꕢꕥꕶ *ṭṣāmaṭ*ª.
ꕢꕮꕢ *nēr*, issue.	ꕓꕢꕥꕶ *drāmaṭ*ª.
ꕦꕱ *pras*, give birth.	ꕦꕄꕢꕥꕶ *pyāmaṭ*ª.
ꕵꕚ *ẓi*, be born.	ꕵꕄꕢꕥꕶ *ẓāmaṭ*ª.
ꕢꕮ *mar*, die.	ꕢꕱꕢꕥꕶ *mūmaṭ*ª, or ꕢꕱꕓꕢꕥꕶ *mūdªmaṭ*ª.

Of all these, except ꕢꕱꕓꕢꕥꕶ *mūdªmaṭ*ª, the first number of the compound does not change for number or case. Thus,—

Sing.	Masc.	ꕄꕢꕥꕶ *āmaṭ*ª.
	Fem.	ꕄꕢꕥꕘ *āmaṭṣ*ª.
Plur.	Masc.	ꕄꕢꕥꕶꕢꕚ *āmaṭⁱ.*
	Fem.	ꕄꕢꕥꕘ *āmaṭṣª.*

The forms for मूदमंतु *mūd°mat°* are.

Sing.	Masc.	मूदमंतु *mūd°mat°*.
	Fem.	मूमंचु *mūmaṭṣ°*.
Plur.	Masc.	मूदिमंति *mūd¹mat¹*.
	Fem.	मूमच्च *mūmaṭṣ°*.

In other words मूदमंतु *mūd°mat°* is only used in the Masculine.

13. मुतु *mut°*, see No. 12 मंतु *mat°*.

14. अनय् *anay*. This gives the force of the past conjunctive participle, negatived (ix. i. 51).

कर *kar*, make.	करनय् *karanay*, not having made.
गर *gar*, make.	गरनय् *garanay*, not having made.
पर *par*, read.	परनय् *paranay*, not having read.
पोठ *pōṭh*, be fat.	पोठनय् *pōṭhanay*, not having become fat.
हि *hi*, buy.	हेनय् *hĕnay*, not having bought.

Irregular are,—

नि *ni*, take.	निनय् *ninay*, not having taken.
दि *di*, give.	दिनय् *dinay*, not having given.
यि *yi*, come.	यिनय् *yinay*, not having come.

15. अनी *anī*. This is the first of a series of forms, connected with the Sanskrit participle in अनीयः *anīyaḥ*. It is used as an impersonal future passive participle, like the Latin *faciendum* (ix. i. 50). Thus,—

कर *kar*, make.	करनी *karanī*, it is to be made.
पक *pak*, go.	पकनी *pakanī*, it is to be gone.
व्वठ *wŏth*, rise.	व्वठनी *wŏthanī*, it is to be risen (one must rise).
चि *ci*, drink.	चनी *cĕnī*, it is to be drunk.
हि *hi*, buy.	हेनी *hĕnī*, it is to be bought.

Irregular, as usual are,—

नि *ni* take.	निनी *ninī*, it is to be taken.
दि *di*, give.	दिनी *dinī*, it is to be given.
यि *yi*, come.	यिनी *yinī*, it is to be come.

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16. उन् *un.*

17. अ॑नु *ạn*^{u}.

18. उनु *un*^{u}.

These three are used indifferently for one another (ix. ii. 2, 3). The first is of the first declension, and the second and third of the second. Their declension is as follows :—

	SINGULAR.	PLURAL.
Nom.	करुन् *karun.*	करन् *karan.*
Acc.	करनस् *karanas.*	करनन् *karanan.*
Ag.	करनन् *karanan.*	करनौ *karanau.*
Obl.[1]	करन *karan*^{a}	करनौ *karanau.*
Nom.	कर॑नु *karạn*^{u} or करुनु *karun*^{u}.	कर्॑नि *kar*^{ạ}*n*^{i}.
Acc.	(not used).	(not used).
Ag.	कर्॑नि *kar*^{ạ}*n*^{i}.	(not used).
Obl.[1]	करनि *karani.*	(not used).

If the root ends in इ *i*, the first and third forms are not used (ix. i. 21, 24). We only have forms like,—

	NOM. MASC.	ACC. SING.
खि *khi*, eat.	ख्य॑नु *khyạn*^{u}.	ख्यनस् *khyanas.*
हि *hi*, buy.	ह्य॑नु *hyạn*^{u}.	ह्यनस् *hyanas.*
चि *ci*, drink.	च्य॑नु *cyạn*^{u}.	च्यनस् *cyanas.*

Exceptions, as usual, are,—

नि *ni*, take.	निनु or न्युनु *nyun*^{u}.	निनस् *ninas.*
दि *di*, give.	दिनु or द्युनु *dyun*^{u}.	दिनस् *dinas.*
यि *yi*, come.	यिनु or य्युनु *yyun*^{u}.	यिनस् *yinas.*

This is used,—

(*a*) As an adjective.

(*b*) As an abstract verbal noun.

(*a*) As an adjective, it is equivalent to the Sanskrit participle in अनीयः *anīyaḥ*. Thus, करुन् *karun* or कर॑नु *karạn*^{u}, means 'it is to be

[1] The oblique form is that form which the agent case assumes before post-positions.

made' (masc.). Its feminine is करंञ् *karaṇ̃*. Examples of its use are,—

ये पाठ् छुय् पऱन् (or परनू) *yih pāṭh* (masc.) *chuh parun* (or *paraṇ*[a]), this lesson is to be read.

ये पूथि छेय् परंञ् *yih pāṭh*[i] (fem.) *chēh paraṇ̃* this book is to be read.

This adjective is used in a peculiar idiom with the verb गछ *gatsh*, go, be proper (Cf. French *ça ira*). The past of this verb, in this sense is गंछू *gaṭsh*[a], not गोव् *gauv*. It is only used in the future and past tenses, not in the present. Examples of the idiom are (ix. i. 42).

त्रुह् गछख् मारनू (or मारुनू) *tsʰ gatshakh māraṇ*[a] (or *māruṇ*[a]) you deserve a beating, literally you will go with propriety to be beaten.

त्रा गछि सुय् मारनू *tsĕ gatshi suh māraṇ*[a], you ought to beat him, literally, he will go to be beaten by you.

त्रा गछि स ज़नान मारंञ् *tsĕ gatshi s*[a] *zanān*[a] *māraṇ̃*, you should beat that woman, literally, that woman will go to be beaten (fem.) by you.

त्रा गंछू सुय् न्यचिव् मारनू *tsĕ gaṭsh*[a] *suh nĕchyuv*[a] *māraṇ*[a], you should have beaten that boy, lit., that boy went to be beaten by you.

त्रा गंछू स ज़नान मारंञ् *tsĕ gaṭsh*[a] *s*[a] *zanān*[a] *māraṇ̃*, you should have beaten that woman.

The same form is used with the verb लग *lag*, be proper, in much the same sense. This is only used in the Future and Past Conditional tenses (ix. i. 43). Thus,—

तंतू लगि च् गछनू *taṭ*[a] *lagi tsĕ gatshaṇ*[a], you should go there. Here the participle is impersonal, and the phrase is literally, the going there by you will be proper. If the object is feminine, the participle must be feminine. Thus,—

च् लगि मारंञ् स ज़नान *tsĕ lagi māraṇ̃ s*[a] *zanān*[a], you should beat that woman, literally, that woman will be proper to be beaten by you.

So, also in the Past Conditional तंतू लगिहे गछुनू *taṭ*[a] *lagihē gatshun*[a] one (I, you, &c.) should have gone there.

The root पज़ *paz*, be proper, is used in exactly the same way (ix. i. 44). Thus, च् पज़िहे सुय् मारुनू *tsĕ pazihē suh mārun*[a] you should have beaten him. Lit. He would have been proper to be beaten by you.

Instead of the agent case, the genitive can be used, in all these idioms (ix. i. 45). Thus we may say,—

च्योनु गछि सुह् मार॑नु *cyōn*ᵘ (instead of *tsĕ*) *gatshi suh mārạn*ᵘ.

च्या॑ञ् गछि स ज़नान मार॑ञ् *cyạ̄ñ* (fem.) *gatshi s*ᵃ *zanān*ᵃ *mārạñ*.

So also in the plural,—

च्या॑नि गछन् तिम् मार॑नि *cyạ̄n*ⁱ *gatshan tim mārᵊn*ⁱ, you should beat them.

च्याञ गछन् तिम मारञ *cyāñĕ gatshan tim*ᵃ *mārañĕ*, you should beat them (fem.).

Pronominal suffixes can also be added to the main verb (not to the participle) (ix. i. 46). The formation of these suffixes will be dealt with in the chapter on verbs.

ग॑छुस् करुनु *gạtshu-s karun*ᵘ, it should have been done *to him*.

ग॑छुय् कर॑नु *gạtshu-y karạn*ᵘ, it should have been done for thee.

लग्यस् करुन् *lagy-as karun*, it should be done for him.

पज़्यम् करुन् *pazy-am karun*, it should be done for me.

(*b*) As a substantive, the form is used as a masculine Abstract Verbal Noun, or Infinitive (ix. ii. 2, 3 and ff). Thus,—

कर *kar*, make. करुन् *karun*, कर॑नु *karạn*ᵘ, or करुनु *karun*ᵘ, the act of making, to make.

The accusative singular is used with the post-position कितु or क्युतु *kyut*ᵘ (ix. i. 17) to form a dative. *E.g.*, परनस् कितु *paranas kyut*ᵘ, for reading. Thus,—

परनस् कितु प्रङ् *paranas kyut*ᵘ *praŋg*, a couch for reading. कितु *kyut*ᵘ is an adjective.

We thus have,—

परनस् कितु प्रङ् *paranas kyut*ᵘ *praŋg*, a couch (masc. sg.) for reading.

परनस् कि॒ति गर *paranas kit*ⁱ *gar*ᵃ, houses (masc. pl.) for reading.

परनस् किच़ू चूकि *paranas kits*ᵘ *cūk*ⁱ, a chair (fem. sg.) for reading.

परनस् किच़ चोक्य *paranas kits*ᵃ *cōkĕ*, chairs for reading.

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In all the above it will be seen that the essential meaning of the verb is active. A couch for reading means a couch for reading something,—*e.g.*, a book,—and the verb is not changed whatever the gender of the object may be. Thus पूथि *pūth*^{i}, a book, is feminine, but we still say

इह् पूथि (or इथ् पोथ्य) परनस् कितु प्रङ् *yih pūth*^{i} (or *yith pōthĕ*) *paranas kyut*^{u} *praŋg*, a couch for reading this book.

We may also use the dative of other verbal nouns in the same way. Thus, च़ेटनस् कितु *tsēṭanas kyut*^{u} or (No. 30*d*.) च़ेटस् कितु *tsēṭas* (masc.) *kyut*^{u}, for grinding to powder; ग्रज़नस् कितु *grazanas kyut*^{u} or (No. 31*g*.) ग्रज़ि कितु *grazi* (fem.) *kyut*^{u}, for roaring.

But if the verb is used passively then it agrees with the subject in gender, and the form is no longer substantival but adjectival. Thus, 'a book for reading' means 'a book for being read,' and we must say,—

पर॑ञ़ किच़ू पूथि *parạñ kits*^{ā} *pūth*^{i}.

On the other hand we say परनस् किच़ू चूकि *paranas kits*^{ā} *cūk*^{i}, because the phrase means a chair for reading, and not a chair for being read.

Note that when the verb is used passively, it is in the form of the *nominative* feminine, not in the accusative, although preceding किच़ू *kits*^{ā}.

We may also use the nominative masculine before कितु *kyut*^{u} (ix. i. 22, 23) when the verb is used passively. Thus परुनु (or परुन् or पर॑नु) कितु प्वस्तुख् *parun*^{u} (or *parun* or *parạn*^{u}) *kyut*^{u} *pŏstukh* (masc. sg.), a book for reading. We thus get the following adjectival forms when the verb is used passively,—

Masc. Sg. पर॑नु कितु प्वस्तु॑ख् *parạn*^{u} *kyut*^{u} *pŏstukh*, a book for reading.

(We cannot say पर॑नु कितु प्रङ् *parạn*^{u} *kyut*^{u} *praŋg*, a couch for reading).

Masc. Pl. रन्॑नि कि॒ति हाख् *ran*^{ə}*n*^{i} *kit*^{i} *hākh*, vegetables for cooking.

Fem. Sg. पर॑ञ़् किच़ू पूथि *parạñ kits*^{ā} *pūth*^{i}, a book for reading.

Fem. Pl. करञ किच़ काम्य *karañĕ kit̲s̲ᵃ kāmĕ*, businesses (fem. pl.) to be done.

These are all capable of declension. Thus,—(acc.) परनस् कितिस् प्रस्तकस् छुह् थवान् *paranas kitis pŏstakas chuh thawān*, he places a book for reading.

The oblique base of the form in अ॑नु *ạnᵘ* is used to indicate a purpose (ix. i. 18). I note that in poetry the form ends in अने *anē*, not in अनि *ani*. Thus,—

परनि (or poetical परने) गछ़ान् छुह् *parani* (or poetical *paranē*) *gat̲shān chuh*, he goes to read. रननि गौव् *ranani gauv*, he went to cook.

When the word समख *samakh*, meet, is used in this form, it means to pay a visit of condolence. Thus, समखनि गौव् *samakhani gauv*, he went to pay a visit of condolence Otherwise the ordinary dative of the verbal noun in उन् *un* is used. Thus, समखन पुछ्य् रुदु *samakhana put̲shy rūdᵘ*, he stopped to meet him (ix. i. 19).

This verbal form is used to form Inceptive and Desiderative compounds. Thus,—

Inceptive compounds, are made with the infinitive in अ॑नु *ạnᵘ* or उनु *unᵘ*, and the verb हि *hi*, take (viii. i. 57). Thus, सुह् छुह् खथ् लेखुनु ह्यवान् *suh chuh khāth lēkhunᵘ hyawān*, he begins to write a letter; करुन् ह्यवान् छुह् *karun hyawān chuh*, he begins to d·. If the object is feminine, the feminine infinitive is used. Thus, सुह् छुह् ज़नान मार॑ञ् ह्यवान् *suh chuh zanānᵃ mārạñ hyawān*, he begins to beat the woman. These forms are however, almost always used in the past tense. Thus, करुन् ह्य॑तुन् *karun hyạtun*, he began to read, (and is doing it now). त॑मि छुह् खथ् लेखुनु ह्य॑तुम॑तु *tạmⁱ chuh khāth lēkhunᵘ hyạtᵘmạtᵘ*, he has begun to write the letter. Literally, by him the letter to-be-written has been taken. So त॑मि छ्यह् ज़नान मार॑ञ् ह्य॑च़ुम॑च़ु *tạmⁱ chhĕh zanānᵃ mārạñ hĕt̲sᵃmạt̲sᵘ*, he has begun to beat the woman (ix. i. 41).

Another way of forming inceptive compounds is to use the oblique form of the infinitive with the verb लग *lag* already mentioned. Thus,—

सुह् करनि ल॑गु *suh karani lạgᵘ*, he began to do.

सुह् ल॑गु खथ् लेखनि *suh lạg^{u} khăth lēkhani*, he began to write the letter.

सुह् ल॑गु ज़नान मारनि *suh lạg^{u} zanān^{a} mārani*, he began to beat the woman. It will be observed that this form of the verbal noun does not change for gender.

Similarly, **Desiderative compounds** are made with the verb इछ् *yitsh*, wish. Thus,—

सुह् छुह् खथ् लेखुनु इछान् *suh chuh khăth lēkhun^{u} yitshān*, he wishes to write the letter.

सुह् छुह् ज़नान मार॑ञ् इछान् *suh chuh zanān^{a} mārạñ yitshān*, he wishes to beat the woman.

त॑मि इछू ज़नान मार॑ञ् *tạm^{i} yitsh^{ū} zanān^{a} mārạñ*, he wished to beat the woman.

In the formation of this abstract noun the following **irregularities** appear (ix. ii. 4). Only one form of the infinitive is given, but the others follow the same rule,—

तल *tal*, fry.	तलुन् *talun* or तल्युन् *talyun*.
बज़ *baz*, fry, serve.	बज़ुन् *bazun* or बज़्युन् *bazyun*.

Some verbs only use their Abstract Noun in the Feminine, and, moreover, are then sometimes irregular in their formation (ix. ii. 24 and ff.). They are the following:—

	Abstract Nouns.
च़र *tsar*, be inwardly wrathful (impersonally).	च़रिञ् *tsariñ*, inward wrath.
च़ुव *tsuv*, quarrel (impersonally).	च़ुविञ् *tsuviñ*.

[These two, when used with other verbs, take the *regular* feminines in phrases like,—

अमिस् ह्य॑च़ून् च़र॑ञ् *amis hĕts^{ū}n tsarạñ*, he began to be angry. Literally, being angry began to him].

मोरव *mōrav*, bear (of pain, impersonally).	मोरवूञ् *mōrav^{ū}ñ*.
मर्च़ *marts*, be impatient (used impersonally).	मर्च़ूञ् *marts^{ū}ñ*.

19. ꠞꠣꠝ् *ạñ.*

20. ꠢꠝ् *iñ.*

21. ꠅꠝ् *ªñ.*

These are all Feminine forms of the masculine verbal adjectives, and of the masculine abstract nouns or infinitives, in ꠅꠝ् *un*, ꠞꠣꠝ् *ạnª*, or ꠅꠞ् *unª* (Nos. 16–18). No. 19 is the regular feminine of all three, and is discussed under the head of those suffixes.

It is also specially used to form a feminine abstract noun in the case of the following verb.

ꠙꠦꠝ *ṯsēn*, know by a sign, ꠙꠦꠝꠞꠣꠝ् *ṯsēnavạñ* the giving of a sign (ix. ii. 43).

In the case of the following verbs it is only used in the fem. pl. (ꠞꠣꠝ *añª*) (ix. ii. 42),—

ꠇꠛ *kaḍ*, bring out.	ꠇꠛꠞꠣꠝ *kaḍañª*, blaming.
ꠞꠣꠔ्ꠢꠢ *pāṣªr*, blame.	ꠞꠣꠔ्ꠢꠢꠞꠣꠝ *pāṣªrañª*, blaming.
ꠔꠥꠇ *çruk*, weep.	ꠔꠥꠇꠞꠣꠝ *çrukañª*, weeping.

A few verbs (mostly connected with female ideas, and mostly used impersonally) have no masculine forms, and are also discussed under the head of Nos. 16–18.

They have only feminine abstract nouns or infinitives in ꠢꠝ् *iñ*, or ꠅꠝ् *ªñ*. For easy reference, I repeat them here.

The two following form their abstract or infinitives in ꠢꠝ् *iñ*, and in no other way (ix. ii. 24). That is to say they have no infinitive in ꠅꠝ् *un*.

ꠙꠢꠢ *ṯsar*, be inwardly wrathful, whether referring to a man or a woman, always used impersonally, and always in the feminine. Thus, ꠞꠢ् ꠙꠢꠇ् *tas ṯsạrª* (fem.), of him or her inward wrath was felt, *i.e.*, he or she was inwardly angry. Abstract noun or infinitive ꠙꠢꠢꠢꠝ् *ṯsariñ*, not ꠙꠢꠢꠅꠝ् *ṯsarun* or ꠙꠢꠢꠞꠣꠝ् *ṯsarañ*, inward wrath. ꠙꠢꠢꠅꠝ् *ṯsarun*, does occur, but it is the abstract noun or infinitive of another verb, ꠙꠢꠢ *ṯsar*, increase.

Other examples of the use of this curious verb is ꠞꠢ् ꠙꠢꠢꠞꠣꠝ् ꠘꠢꠇ् *tas ṯsarān chhĕḥ* (fem.) he or she is inwardly angry. ꠞꠢ् ꠙꠢꠢꠢ *tas ṯsari*, he or she will be angry.

चुव *ʦuv*, (ix. ii. 24) quarrel, also used impersonally, and in the feminine. Abstract noun or infinitive चुविञ् *ʦuviñ*, quarrelling.

Examples of use,—

Present tense, सुद् छुद् चुवान् *suh chhuh ʦuvān*, he is quarrelling.

Future tense, सुद् चुवि *suh ʦuvi*, he will quarrel.

Past tense, only used in the feminine,—

तमि चुवू *tam*^{i} *ʦuv*^{ū}, by him quarrelling was done.

तमि चुवू *tami ʦuv*^{ū}, by her quarrelling was done.

Note, that in the Past, it is always used impersonally, and in the feminine gender though it may refer to males.

We thus see that च्रर *ʦar* is always construed with the genitive (तस् *tas*), but चुव *ʦuv*, in the Present and Future as an ordinary Intransitive Verb, and in the Past as an Impersonal Verb.

The two following verbs, form their abstract nouns or infinitives in ञ्ञ् ^{ū}*ñ*, and in no other way.

मोरव *mōrav*, (viii. iii. 25) bear pain, used impersonally and in the feminine in the past tenses only. Abstract noun or infinitive मोरवूञ् *mōrav*^{ū}*ñ*.

Examples of the use of this verb,—

Present tense, सुद् छुद् मोरवान् *suh chuh mōravān*, he is bearing pain.

Future tense, सुद् मोरवि *suh mōravi*, he will bear pain.

Past tense, तमि मोरवू *tam*^{i} *mōrav*^{ū} (fem. impersonal) (pain) was borne by him, he bore pain.

मर्च्छ *marʦ* (ix. ii. 25), be impatient. Abstract noun, or infinitive, मर्च्छूञ् *marʦ*^{ū}*ñ*.

Examples of use,—

Present tense, तस् छद् मर्च्छान् *tas chhĕh* (fem.) *marʦān*, of that man, or of that woman, there is impatience.

Future tense, तस् मर्च्छि *tas marʦi*, of that man, or of that woman, there will be impatience.

Past tense, तस् मर्च्छू *tas marʦ*^{ū}, of that man, or of that woman, there was impatience.

It is thus construed exactly like च्रर *ʦar*.

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The following verbs optionally form feminine abstract nouns or infinitives in ऊञ् *ᵘñ*, in addition to the ordinary masculine one in उन् *un* (ix. ii. 26).

ख्स् *khᵃs*, pluck the hair. In the case of this verb, ख्सुन् *khᵃsun* (masc.) is used when men are referred to, and ख्सूञ् *khᵃsᵘñ* (fem.) when women are referred to (*sensu obscœno*).

फित्त *phits*, forget; फ्रश *phŏç*, be inwardly angry; फुह *phuh*, be inwardly angry. In the last two the fem. abstract noun is used of the wrath of females.

वज़व *wazav*, moisten; वुत्त *wuts*, be burnt.

The following verbs optionally form the feminine abstract noun in इञ् *iñ*, in addition to the ordinary masculine one in उन् *un* (ix. ii. 27–32).

सार *sār*, feel (see No. 26); खुत *khut*, dig from below; टुव *ṭuv*, close (of a flower); डुव *ḍuv*, sweep; डल *ḍal*, pass over; त्रुक *truk* (see No. 30*a*), bite in pieces; थ्यक *thĕk*, praise; नत्त *nats*, dance; नट *naṭ*, tremble; नम *nam*, bend; वुज़ *wuz*, appear (as water from a spring); वुठ *wuṭh*, twist; वुप *wup*, burn inside; लिव *liv*, smear (makes लिविञ् *liviñ*, or लिपिञ् *lipiñ*); ल्यव *lyav*, lick; कर *kar*, do (करिञ् *kariñ*, however, only means a mason's trowel); वट *waṭ*, twist (वटिञ् *waṭiñ* means a collection); फर *phar*, steal (फरिञ् *phariñ* means a female thief). Thus, सारिञ् *sāriñ*, feeling.

If the secondary suffix अल् *al* (sec. suf. No. 6) is ever used with any abstract verbal noun, it cannot be used with the masculine form, but only with the feminine form in इञ् *iñ* (ix. ii. 27). This अल *al* is only used with a few verbs. Thus, थ्यकिञ़ल् *thĕkiñal*, a praiser; नटिञ़ल् *naṭiñal*, a trembler, and so on.

22. अन् *an*, (masculine). Used to form masculine abstract nouns in the case of three verbs (ix. ii. 41). Thus,—

चि *ci*, drink.	च्यन् *cyan* (masc.) drinking.
खि *khi*, eat.	ख्यन् *khyan* (masc.) drinking.
हि *hi*, place.	ह्यन् *hyan* (masc.) placing.

20. अन् *an* (fem.). Used to form feminine abstract nouns in the case of the following verbs (ix. ii. 35, 37) कपट *kapaṭ*, cut; द्न *dᵃn*,

shake out dust; नहाव *nahāv*, obliterate; पिल *pil*, arrive; फिर *phir*, turn over (pages); माज़ *māz*, be intent upon; मिलव *milav*, unite; मुच्चर *mutsar*, open; मूर *mūr*, shell (pease, &c.); ल्यव *lyav*, lick; वुठ *wuṭh*, twist; वुह *wuh*, be not extinguished; आ॑ड्र *ạ̄dᵃr*, mix; ख॑ंड्र *khạṇḍᵃr*, divide; छु॑ट्र *tshŏṭᵃr*, make small; ज़ीठ्र *zīṭhᵃr*, make long; ट्व॑ट्र *ṭŏṭᵃr*, have insufficient means of livelihood; पीठ्र *pīṭhᵃr*, blame and instruct; फुट्र *phuṭᵃr*, break; ब॑ड्र *bạḍᵃr*, make great; बा॑ग्र *bạ̄gᵃr*, divide; म्व॑ट्र *mŏṭᵃr* make thick; वोव्र *wōwᵃr*, shave metal.

Thus, कपटन् *kapaṭan* (fem.) cutting.

The verb गिलव *gilav*, whirl about, forms गिलन् *gilan*, which means 'an attempt' (ix. ii. 36).

The verb नव *nav*, be new, forms न्व॑व्रन् *nŏvᵃran*, raking up an old story against a person (ix. ii. 38).

The verb लार *lār*, touch, forms लारन् *lāran*, which means 'trembling' (ix. ii. 40).

Some people use this form with the roots त॑ञ्र *tạñᵃr*, dilute; त॑च्र *tạtsᵃr*, make hot; स्य॑ज़्र *syạzᵃr*, make straight (ix. ii. 39).

24. रब् *rab*. This is optionally used in the case of the root मष *maṣ*, to form a masculine verbal abstract noun (ix. ii. 5). Thus, मष्रब् *maṣrab*, forgetting.

25. उ् ᵘ, this is optionally used to form masculine verbal abstract nouns from the three following roots (ix. ii. 6).

द्वदर *dŏdar*, rot.	द्वद॑रु *dŏdạrᵘ*, rotting.
ज़्वज़र *zŏzar*, wither.	ज़्वज़॑रु *zŏzạrᵘ*, withering.
स्वसर *sŏsar*, decay.	स्वस॑रु *sŏsạru*, decaying.

26. ऊ् ᵘ is used optionally to form feminine verbal abstract nouns in the case of the following verbs (viii. ii. 62, 63, 68, 72, 79).

तछ *tach*, pare, त॑छू *tạchᵘ*, scratching (also तछ् *tāch*); रछ *rach*, protect, र॑छू *rạchᵘ*, protection; छाड *tshāḍ*, search, छा॑डू *tsạ̄ḍᵘ*, searching; छाँड *tshā̃ḍ*, search (with a nasal), makes either छा॑ँडू *tshạ̄̃ḍᵘ*, or छाँड् *tshā̃ḍ*; छान *chān*, sift, छा॑ञू *chạ̄ñᵘ*; दोन *dōn*, card cotton, दूञू *dūñᵘ*; थार

thār, be quick, थार् *thār*^{a}; बाबर *bābar*, be quick, बाबर् *bābar*^{a}; सार *sār*, feel, सार् *sār*^{a} (*vide* p. 210); हन्दर *hand^{a}r*, be cold, हन्दर् *hand^{a}r*^{a}.

27. अ *a* (masc.); used optionally to form masculine verbal abstract nouns in the case of the following verbs (ix. ii. 7).

छुम्ब *chŏmb*, husk; त्रुस *zŏs*, cough; बगार *bagār*, fry in oil; बठ *bĕh*, sit; लम *lam*, pull; लोस *lōs*, be weary; वुन *wun*, be unlucky.

Thus, छुम्ब *chŏmb^{a}*, the act of husking, and so on.

28. आ *a* (fem.) used optionally to form a feminine abstract verbal noun in the case of the verb वुंग *wuŋg*, to howl like a dog, in a special meaning (ix. ii. 57).

Thus, वुंग *wuŋg^{a}*, lying awake at night on account of some care.

वुंग् *wuŋg*, means a dog's howl.

29. आव् *āv*. Used optionally in the case of the verb लद् *lad*, send, build, elevate, push, when it means 'build,' to form a masculine abstract noun. लदाव् *ladāv*, also means, the wages of building (ix. ii. 8).

30. ——— (masc.). Several verbs optionally drop all suffixes to form abstract nouns. In such cases roots ending in hard consonants aspirate them in the nominative singular and plural. These roots are classed according to their final letters. In the case of causal roots ending in आव *av*, the आव *av* is dropped.

(*a*) क *k*, certain verbs in क *k* and कव *kav*, make optional verbal abstract nouns by changing the क *k* or कव *kav* to ख् *kh* (ix. ii. 9). These verbs are,—

छुकव *chŏkav*, wash.

छुक *chŏk*, become speechless.

टक *ṭak*, bite in two with a noise.

टुक *ṭuk*, bore like a rat.

ट्रकव *ṭŏkav*, cause to disappear.

ठुक *ṭhuk*, bury.

तुक *truk*, cut to pieces, eat (*vide* p. 210).

थक *thak*, be weary.

पाकव *pākav*, cook.

फुक *phuk*, blow up fire.

ब्रक *brak*, clench with the teeth.

Thus, छुख् *chŏkh*, the act of washing. छ्ख् *ʦhŏkh*, speechlessness and so on. The root फुक *phuk* becomes फ्ख् *phŏkh*, when it means 'to puff.' Otherwise it is simply फुख् *phukh*, the blowing of a fire.

(*b*) ग *g*. This case is exactly similar to the preceding one. It occurs in the case of three verbs (ix. ii. 10). Thus,—

	Optional form of Abstract Noun.
डगव *dŏgav*, husk.	डग् *dŏg*, husking.
रंग *rayg*, paint.	रंग् *rayg*, painting.
सगव *sagav*, water plants.	सग् *sag*, watering.

(*c*) च्छ *ʦ* (ix. ii. 11). It occurs only in the case of the verb,—

वाँच्छ *wā̃ʦ*, cheat; abstract noun वाँछ् *wā̃ʦh*, cheating.

(*d*) ट *ṭ* (ix. ii. 12).

च्छेट *ʦēṭ*, powder; लूट *lūṭ*, rob; वाट *wāṭ*, join. These can form abstract nouns in ठ *ṭh*. Thus, च्छेठ् *ʦēṭh*, pounding to powder.

(*e*) ड *ḍ* (ix. ii. 13).

गंड *gaṇḍ*, tie; optional abstract noun, गंड् *gaṇḍ*, tieing.

(*f*) न *n* (ix. ii. 14).

खन *khan*, dig; च्छन *ʦhĕn*, cut; optional abstract nouns, खन् *khan*, digging, च्छन् *ʦhĕn*, cutting.

(*g*) प *p*. The following verbs optionally make their abstract nouns in फ् *ph* (ix. ii. 15).

कांप *kā̃mp*, tremble; क्रप *krp*, cut with scissors; च्छाप *ʦāp*, chew (Cf. No. 31*n*.); ज़प *zap*, mutter prayers; टप *ṭap*, kick of a horse, &c.

Thus, कांफ् *kā̃mph*, trembling, and so on.

(*h*) म *m* (ix. ii. 16).

ब्रम *bram*, be in error; abstract noun, optionally, ब्रम् *bram*.

(*i*) र *r* (ix. ii. 17).

चार *cār*, tie tightly.

चीर *cir*, wring out.

तार *tār*, cross over (active).

फुकार *phukār*, speak in anger, bubble up (of steam).

फ्यार *phyār*, strain (liquid).

मार *mār*, beat.

सर *sŏr*, remember.

Thus, optional abstract noun, चार् *cār*, tieing tightly.

(*j*) ल *l* (ix. ii. 18).

च्यल *ʦĕl*, force inside (active).

छ्यल *ʦhal*, cheat.

ज़ल *zºl*, scrape.

तोल *tōl*, weigh.

दल *ḍal*, split (active).

मेल *mēl*, meet.

Thus, optional abstract noun, च्यल् *ʦĕl*, forcing inside.

(*k*) व *w* (ix. ii. 19).

ज़ुव *zuv*, live.

ड़ुव *ḍuv*, sweep.

ताव *tāv*, heat.

व्वहव *wŏhav*, curse.

These optionally form their abstract nouns in व् *v*. Thus, ज़ुव् *zuv*, life; व्वहव् *wōhav*, cursing.

(*l*) स *s* (ix. ii. 20).

रस *ras*, be juicy.

ह्सव *hºsav*, incite.

Thus, रस् *ras*, juiciness; ह्स् *hºs*, inciting.

(*m*) ह *h* (ix. ii. 21, 22).

ग्रह् *gºh*, grind.

च्रह् *ʦºh*, suck.

ग्रह् *gºh*, grinding; च्रह् *ʦºh*, sucking. The former also makes गस् *gas*, grinding.

31. ——— (fem.). Several verbs optionally drop all suffixes to form feminine abstract nouns. In such cases, roots ending in hard consonants aspirate them in the nominative singular. These roots are classed according to their final letters.

In the case of causal roots ending in अव *av*, the अव *av*, is dropped. The following are the verbs :—

(*a*) क *k* (ix. ii. 56).

छक *chak*, scatter.

छिक *chik*, sprinkle.

चमक *camak*, shine.

ट्क *ṭ*ᵃ*k*, run.

फूँक *phū̃k*, smell.

शेँक *çē̃k*, doubt.

Thus, छख् *chăkh*, (fem.) a scattering, a sowing of seed; शेँख् *çē̃kh* (fem.), doubting.

(*b*) ख *kh* (ix. ii. 75).

There is only one, and it is irregular. लेख् *lēkh*, write, makes लेफ् *lēph*, a writing (nom. pl. लेफ *lēph*ᵃ).

(*c*) ग *g* (ix. ii. 57).

ज़ाग *zāg*, be watchful.

टाँग *ṭā̃g*, emit a loud cry.

दग *dag*, beat.

मंग *maŋg*, ask.

लग *lag*, be with.

लाग *lāg*, imitate.

वुंग *wuŋg*, bark (of a dog).

श्वंग *çŏŋg*, sleep.

Thus, ज़ाग् *zāg*, watchfulness. वुंग् *wuŋg*, is, specially, a dog's howl. वुंग *wuŋg*ᵃ, means the lying awake at night owing to some care.

(*d*) छ *ch* (ix. ii. 61).

तछ *tach*, pare.

मन्दछ *mandach*, be ashamed.

Thus, तछ् *tăch*, scratching. The first may also form त॑छ् *tạch*ᵃ (62).

(*e*) च़ *ts* (ix. ii. 58).

पच़ *pats*, trust with a loan.

रोच़ *rōts*, be preferred.

श्रोच़ *çrōts*, be pure.

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Thus, पछ् *pătsh*, trust (of all kinds), रोछ् *rōtsh*, preference.

(*f*) छ् *tsh* (ix. ii. 59).

इछ *yitsh*, wish.

प्रिछ *pritsh*, ask.

Thus, इछ् *yitsh*, wishing. We say प्रिछगा॑रू क॑रूनस् *pritsh*ᵃ*-gạ̄r*ᵘ *kạr*ᵘ*-n-as*, asking, &c., was done by him for him.

(*g*) ज़ *z* (ix. ii. 64).

ग्रज़ *graz*, roar.

Thus, ग्रज़् *graz*, a roaring; ग्रज़ि कितु *grazi kyut*ᵘ, for roaring (ix. i. 17).

(*h*) ट *ṭ* (ix. ii. 65).

चू॑ट *tsạ̄ṭ*, break wind with noise.

छट *tshaṭ*, winnow.

फुट *phuṭ*, be broken.

Thus, छठ् *tshăṭh*, winnowing.

(*i*) ठ *ṭh* (ix. ii. 66).

द्यठ् *ṭyăṭh*, be bitter. The abstract noun, द्यठ् *ṭyăṭh*, means necessity, necessariness.

Thus, तमा॑कि द्यठ् *tamạ̄k*ⁱ *ṭyăṭh*, the want of tobacco.

(*j*) ड *ḍ* (ix. ii. 67, 68).

माँड *māḍ*, mix.

छाँड *tshā̃ḍ*, search.

The latter makes छाँड् *tshā̃ḍ*, or छा॑डू *tshạ̄ḍ*ᵘ. [The verb छाड *tsāḍ*, search, without the nasal, always makes छा॑डू *tsạ̄ḍ*ᵘ].

(*k*) त *t* (ix. ii. 69).

न्यत *nyat*, shear.

लतव *latav*, kick.

Thus, न्यथ् *nyăth*, a shearing; लथ् *lăth*, a kick.

(*l*) द *d* (ix. ii. 70).

पद *pad*, break wind.

प्यद *pyad*, be cognisant of.

प्वंद *pŏnd*, sneeze.

Thus, प्वंद् *pŏnd*, a sneeze.

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(*m*) न *n* (ix. ii. 71).

आमन *āman*, change for the bad.

ज़ान *zān*, know.

Thus, आमन् *āman*, a change for bad.

(*n*) प *p* (ix. ii. 73).

च़ाप *tsāp*, gnaw.

Thus, च़ाफ् *tsāph*, a gnawing (Cf. No. 30*g*.).

(*o*) फ *ph* (ix. ii. 74).

वुफ *wuph*, fly.

Thus, वुफ् *wuph* a flying.

(*p*) ब *b* (ix. ii. 76).

रंब *ramb*, be beautiful.

शूब *çūb*, be beautiful.

Thus, रंब् *ramb*, beauty.

(*q*) य *y* (ix. ii. 77).

प्रय *pray*, be pleased with.

Thus, प्रय् *pray*, love.

(*r*) र *r* (ix. ii. 78).

आवर *āwar*, cover.

ड॑ख्र *ḍạkhᵃr*, depend upon.

तू॑र *tụr*, be cold.

थॉ॑थर *thạ̄thar*, be quick.

दोर *dōr*, run.

मूर *mūr*, husk.

लार *lār*, touch.

सखर *sakhar*, set forth.

लार् *lār*, means absconding. The verb दुँन्छ्र *dūntshᵃr*, separate, forms दून्छ् *dūntsh*, separating (ix. ii. 60). The verb, व॑ड्र *wạḍᵃr*, bury makes वड् *waḍ* (ix. ii. 67).

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(*s*) ल *l* (ix. ii. 80).

गाँगल *gā̃gal*, } be disturbed in one's work.
ग्राँगल *grā̃gal*, }

टाल *ṭāl*, go away with indifference.

तंबल *tambal*, change one's mind.

म्वकल *mŏkal*, be released.

व्वलल *wŏlal*, adorn.

शहल *çahal*, be cold.

Thus म्वकल् *mŏkal*, release.

(*t*) व *w*, (ix. ii. 81).

दव *dav*, run.

Thus, दव् *dav*, running.

32. इश् *iç* (ix. ii. 33). This is used optionally to form feminine abstract nouns or infinitives, in the case of the following verbs.

च़क *ts̱ŏk*, be angry; तप *tap*, become hot; लंग *laŋg*, be lame.

Thus, च़किश् *ts̱ŏkiç*, anger.

The √ मिलव *milav*, unite, irregularly forms मिलमिश् *milamiç* (ix. ii. 34).

33. अक *ak* (nom. sg. अख *akh*) (fem.), used to form a feminine abstract noun in the case of the verb पोठ *pōṭh*, be fat; *e.g.*, पोठख् *pōṭhakh*, fatness (ix. ii. 45).

34. अत् *at* (nom. sg. अथ् *ath*) (fem.), used to form feminine abstract nouns in the case of the following verbs (ix. ii. 44).

अर्ज़ *arz*, earn; बाव *bāv*, declare one's intentions; व्वपज़ *wŏpaz*, become; श्रप *çrap*, decay; स्यद *syad*, succeed; गर *gar*, make; वट *waṭ*, twist; शहल *çahal*, be cold; ह्यक *hyak*, be able.

Thus, अर्ज़त् *arzat*; nom. sg. अर्ज़थ् *arzath*, earning.

35. अय् *ay* (fem.), used to form feminine abstract nouns in the case of the following verbs (ix. ii. 46).

वखन *wakhan*, tell; खार *khār*, ascend; ज़ाग *zāg*, be watchful; वाल *wāl*, take down; नच़ *nats̱*, dance; ह्रख *hŏkh*, be dry; आमन *āman*, change for the bad.

Thus, वखनय् *wakhanay*, telling. The verb मंज *mayg*, ask, forms मांगय् *mā̃gay*, asking (ix. ii. 47).

The verb बांग्र् *bā̃g°r*, divide, forms बागय् *bāgay*, division, or बागनय् *bāganay* (ix. ii. 48, 54).

The verb ज़ेन *zēn*, conquer, forms ज़िय् *ziy*, victory (ix. ii. 49).

From the verb साव *sāv*, sleep, comes the derivative, उदसावय् *udasāvay*, waking, lying awake (ix. ii. 50).

The simple word सावय् *sāvay*, means 'happiness' (ix. ii. 51).

From the verb आमन *āman*, change for the worse, already mentioned, we also have हामनय् *hāmanay*, a false charge (ix. ii. 52).

From the verb लाग *lāg*, cultivate, we have लागनय् *lāganay*, cultivation (ix. ii. 53).

From the verb साद् *sād*, accomplish, we have सादनय् *sādanay*, a chief cause (ix. ii. 55).

36. वअञ् *awañ* (fem.) (with unmodified vowel). This is added to a verb to signify wages (ix. ii. 82, 83, 84). Thus,—

करवञ् *karawañ*, (fem.), the wages of doing; परवञ् *parawañ*, the wages of reading; लोनवञ् *lōnawañ*, the wages of reaping; रोज़वञ् *rōzawañ*, the wages of remaining.

If the root ends in a vowel the suffix is ववञ् *wawañ*. Thus,—

(दि *di*) दिववञ् *diwawañ*, the wages of giving; निववञ् *niwawañ*, the wages of taking; ख्यववञ् *khyawawañ*, the wages of eating; च्यववञ् *cyawawañ*, the wages of drinking.

37. अन्हार् *anhār*, used to signify fitness (ix. ii. 91). Thus,—

करन्हार् *karanhār*, fit to be done.

गंडन्हार् *gaṇḍanhār*, fit to be bound.

If the verb ends in a vowel, the suffix becomes अनहार *anahār*. Thus,—

ख्यनहार् *khyanahār*, fit to be eaten.

च्यनहार् *cyanahār*, fit to be drunk.

ह्यनहार् *hyanahār*, fit to be placed.

But as usual,—

निनदार् *ninahār*, fit to be taken;

दिनदार् *dinahār*, fit to be given;

यिनदार् *yinahār*, fit to come.

The verb लग *lag* makes लगदार् *lagahār*, which simply means 'worthy.'

On Secondary Suffixes in Kāçmīrī.—*By* G. A. Grierson, C.I.E.

[Read August, 1898.]

The following account of Secondary Suffixes in Kāçmīrī is based on the fourth part of Īçvara-kaula's *Kaçmīra-çabdāmṛta*. Some of the so-called suffixes are evidently merely nouns in composition, but I have thought it best to retain them.

The following suffixes express **Relationship.**

1. पूत् *pūt*ª (iv. 1).[1] This Suffix (the Skr. पोतः *pōtaḥ*) added to a noun in the form of the instrumental singular case (the न् *n* of the first declension being dropped), signifies son, *e.g.*,—

दर् *dar*, (instr. दरन् *daran*) a certain caste, दर-पूत् *darª-pūtª*, the son of a man of that caste.

कौल् *kaul*, a certain caste, कौल-पूत् *kaulª-pūtª*, the son of a man of that caste.

त्युक् *tyukª* (instr. तिक *tikⁱ*), a certain caste, तिक-पूत् *tikⁱ-pūtª*, the son of a man of that caste.

काव् *kāv*, a crow, काव-पूत् *kāvª-pūtª*, a young crow.

कट् *kaṭ*, a ram, कट-पूत् *kaṭª-pūtª*, a young ram.

Apparently irregular are,—

म्यां-पूत् *myā̃-pūtª*, a young ram; कक्र-पूत् *kŏkar-pūtª* a chicken; कोतर्-पूत्, *kōtar-pūtª* a young pigeon; and पचिन्-पूत् *pachin-pūtª*, a young bird.

This Suffix can only be used with generic terms, such as the above. It cannot be used with proper names (iv. 2).

Note.—The word चूर-पूत् *ṯsūrª-pūtª*, either means the son of a thief (चूर् *ṯsūr*), or may be applied to children as a term of endearment (iv. 3).

[1] References here and elsewhere to the *Kaçmīra-çabdāmṛta*.

When the Suffix is added to the word मिञ् *miñ*, a kiss, मिञ-पूत् *miñĕ-pūt*ª, or म्वञ-पूत् *mŏñĕ-pūt*ª, means simply a kiss (iv. 4).

2. कठ् *kăṭh*. This word also means son, but is rarely used, except in abuse, or anger (iv. 5), *e.g.*,—

चूर-कठ् *ṭsūrª-kăṭh*, son of a thief.

गान-कठ् *gānª-kăṭh*, son of a pimp.

पोग-कठ् *pōgª-kăṭh*, son of destruction.

वाज़-कठ *wāzª-kăṭh*, son of a cook.

रास-कठ् *rāsª-kăṭh*, son of adultery.

कु-कठ् *kŭ-kăṭh*, (कुपुत्रः) a bad son.

We also, however, find सु-कठ् *sŭ-kăṭh*, a good son (सुपुत्रः) and सुख-कठ् *sŭkhª-kăṭh*, a son of happiness (सुखपुत्रः).

3. कॅट्ऽ *kạṭª*. This Suffix, on the contrary is used as a term of praise, with words signifying castes or professions (iv. 6), *e.g.*,—

बट-कॅट्ऽ *baṭª-kạṭª*, a real son of a brāhman (*i.e.*, a good brāhman).

So दर-कॅट्ऽ *darª-kạṭª*, कौल-कॅट्ऽ *kaulª-kạṭª*.

छान-कॅट्ऽ *chānª-kạṭª*, a real son of a carpenter, a good carpenter.

Apparently irregular in not having a final ª for the first member, are words like,—

सनर-कॅट्ऽ *sŏnªr-kạṭª*, a real son of a gold-smith, a good gold-smith.

मनर-कॅट्ऽ *manªr-kạṭª*, a real son of a shell-worker, a good shell-worker, cf. No. 38.

We find also (from मूँष् *mūṣ*, a buffalo, *ante*, p. 63), मैंष-कॅट्ऽ *maĭṣª-kạṭª*, a buffalo-calf.

4. तुर् *turª*, fem. त्र् *tªr*. This Suffix is associated with the relationship of first-cousin (iv. 8, 9, 10). Thus,—

पफतुर् बोयु *pŏphaturª bōyª*, the son of a paternal aunt (*lit.*, brother by a paternal aunt).

मासतुर् बोयु *māsaturª bōyª*, the son of a maternal aunt.

मामतुर् बोयु *māmaturª bōyª*, the son of a maternal uncle.

पफत्र् ब्यञ *pŏphatªr bĕñĕ*, the daughter of a paternal aunt.

मासत्र् ब्यञ *māsat°r běñĕ*, the daughter of a maternal aunt.

मामत्र् ब्यञ *māmat°r běñĕ*, the daughter of a maternal uncle.

Irregular is पितुष् बोय *pitur° bōy°* (fem. पित्र् ब्यञ *pit°r běñĕ*), the son (daughter) of a paternal uncle.

So also we have पफत्र् बा॑यि काकॅञ् *pŏphat°r bā̤y¹ kākaṇ̃*, the wife of the son of a paternal aunt.

Similarly for the other wives, मासत्र् बा॑यि काकॅञ् *māsat°r bā̤y¹ kākaṇ̃*; मामत्र् बा॑यि काकॅञ् *māmat°r bā̤y¹ kākaṇ̃*, and पित्र् बा॑यि काकॅञ् *pit°r bā̤y¹ kākaṇ̃*.

5. थ्र् *th°r*, fem. ज़ *z°* indicates, with a change in the termination of the root-word, the relationship of nephew (iv. 11, 12, 13). Thus,—

बाबथ्र् *bābath°r*, brother's son (बोयू *bōy°*, a brother).

बाव्ज़ *bāw°z°*, brother's daughter.

ब्यनथ्र् *byanath°r*, sister's son (ब्यञ *běñĕ* a sister).

ब्यन्ज़ *byan°z°*, sister's daughter.

द्यारथ्र् *dyārath°r*, son of a husband's brother, (द्रियू *dryuy°*, a husband's brother).

द्यारज़ *dyāraz°*, the daughter of a husband's brother.

The following Suffixes form **adjectives of possession.**

6. अल् *al*, fem. अल् *al*. This Suffix is restricted to natural possessions, *i.e.*, when a thing or quality is spoken of as not only accompanying an object, but as actually forming part of it (iv. 15–19), cf. No. 9. When added to verbal nouns, they must be in the feminine form, see p. 210.

As usual, the noun to which the suffix is added takes the form of the instrumental singular, but before अ *a*, इ *i* becomes य् *y*, and अ *a*, for अन् *an*, is dropped. Thus,—

From.	We have.		
दा॑र् *dā̤r°*, a beard.	दार्यल् *dāryal*,	fem. दार्यल् *dāryal*,	bearded.
गोंट्श् *gŏṭsh*, a moustache.	गोंट्शल् *gŏṭshal*,		moustached.
डख् *ḍăkh*, a hair-curl.	डखल् *ḍakhal*,		curly-headed.
बब् *bab*, bosom.	बबल् *babal*,		bosomed.
कोच् *kōch*, belly.	कोचल् *kōchal*,		bellied.

ह्यङ्ग् *hyaŋg*, a horn.	ह्यङ्गल् *hyaŋgal*,	horned.
ठूँख् *ṭhū̃kh*, blow of a horn.	ठूँकल् *ṭhū̃kal*,	striking with the horn.
ठ्वल् *ṭhŏl*, blow of a horn.	ठ्वलल् *ṭhŏlal*,	striking with the horn.
च़फ् *tsăph*, a bite.	च़पल् *tsapal*,	biting.
फश् *phaç*, brightness, cleanness.	फशल् *phaçal*,	well-dressed.
ग्य॑ञ् *gẹ̆ñ*, a wrinkle.	ग्यञ़ल् *gĕñal*,	wrinkled.
स्यस् *syas*, a wart.	स्यसल् *syasal*,	warted.
प्वंद् *pŏnd*, a sneeze.	प्वंदल् *pŏndal*,	one who sneezes.
मछ्यच *machĕṭĕc*^{a}, moles.	मछ्यचल् *machĕṭĕcal*,	covered with moles.
च़ास् *tsās*, a cough.	च़ासल् *tsāsal*,	one who has a cough.
च़ूँ॑ट् *tsū̃ṭ*, crepitus ventris.	च़ूँ॑टल् *tsū̃ṭal*,	one who breaks wind.
So also we have,—		
हाछ् *hātsh*, an accusation (fem.).	हाच़ल् *hātsal*,	one who brings an accusation (*not* an accused person).
ज़्यव् *zyav*, a tongue.	ज़्यवल् *zyaval*,	a calumniator.

The word does not mean possessing a tongue, which is ज़्यविस॑स्तु *zĕvisạst*^{u}, or ज़्यविवोलु *zĕviwōl*^{u}, (No. 9).

When this suffix is added to the words ब्यञ *bĕñĕ*, a sister, and कूरु *kūr*^{u}, a daughter, the compound implies incestuous sexual connexion, thus, ब्यञ़ल् *bĕñĕl*, कोर्यल् *kōryal*. To convey the idea of possessing a sister or a daughter we must say ब्यञ़वोलु *bĕñĕwōl*^{a}, कोर्यवोलु *kōrĕwōl*^{u}, (No. 9).

The word दा॑रु *dạ̄r*^{u}, a beard, optionally takes the suffix याल् *yāl* thus दार्यल् *dāryal*, or दा॑रियाल् *dạ̄r*^{i}*yāl*, bearded (iv. 19).

The word यड् *yaḍ*, a belly, becomes यडल् *yaḍal*, having a large belly, pot-bellied (iv. 30). On the other hand यड़ल् *yaḍ*^{a}*l*, means 'gluttonous' (iv. 31). So from हर् *har*, a quarrel, we have हर्ल् *har*^{a}*l*,

quarrelsome (iv. 32), and from जत् *jat*, hair, जच़्ल् *jats^{a}l*, very hairy (iv. 33).

7. लद् *lad*, fem. लद् *lad*. This suffix is sometimes used instead of अल् *al*, but usually in a bad sense (iv. 20, 21). Thus,—

फक् *phak*, a stink.	फकलद् *phakalad*	fem. फकलद् *phakalad* stinking.
छुक् *tshŏk*, slyness.	छुकलद् *tshŏkalad*,	sly.
छुक् *chŏk*, a sore.	छुकलद् *chŏkalad*,	full of sores.
बक् *bak*, a cry.	बकलद् *bakalad*,	prating.
द्वख् *dŏkh*, pain.	द्वखलद् *dŏkhalad*,	pained.
द्राग् *drāg*, a famine.	द्रागलद् *drāgalad*,	afflicted with famine.

This termination cannot be substituted for अल् *al* in every case. For instance we cannot say गोंछलद् *gōtshalad*, डखलद् *ḍakhalad*, or बबलद् *babalad*. But with some words both अल् *al* and लद् *lad* can be used. Thus besides ग्यञ़ल् *gĕñal*, we can have ग्यञ़लद् *gĕñalad*, wrinkled; besides स्यसल् *syasal*, स्यसलद् *syasalad*, warted; and besides च़ासल् *tsāsal*, च़ासिलद् *tsāsilad* (*sic*). When the word फश् *phaç* means eccentricity, it takes the termination लद् thus फशलद् *phaçalad*, mad, eccentric. When it means brightness, it takes the termination अल् thus फशल् *phaçal*.

8. योरु् *yōr^{u}*, fem. यो॑रू् *yạ̄r^{ū}*. This suffix occurs in the following words. It is added as usual to the instrumental in the first two cases. In the last it is irregular (iv. 22, 23) :—

प॑ज़ु *pạz^{u}*, truth.	प॑ज़ियोरु् *pạz^{i}yōr^{u}*,	fem. प॑ज़ियो॑रू् *pạz^{i}yạ̄r^{ū}*, truthful.
अप॑ज़ु *apạz^{u}*, untruth.	अप॑ज़ियोरु् *apạz^{i}yōr^{u}*,	fem. अप॑ज़ियो॑रू् *apạz^{i}yạ̄r^{ū}*, untruthful.
म॑ञ्ज़िमु *mạnzyum^{u}*,	म॑ञ्ज़िमुयोरु् *mạnzyum^{u}yōr^{u}*,	a go between, a medium.

The last word is really a compound substantive and its fem. is मञ्ज़िमूयार्यञ् *manzim^{ū}yārĕñ*.

9. वोल् *wōl*ᵃ, fem. वाज्यञ् *wājěñ*; a suffix signifying possession, when the thing possessed accompanies the possessor, but does not actually form part of it (iv. 24). (Cf. No. 6).

As elsewhere, the suffix is added to the instrumental singular. Thus,—

द्यार् *dyār*, (masc.) wealth. द्यारवोल् *dyārawōl*ᵃ fem. द्यारवाज्यञ् *dyārawājěñ*, wealthy.

ल्वर् *lạr*ᵃ, (fem.) a house. लरिवोल् *lariwōl*ᵃ, लरिवाज्यञ् *lariwājěñ*, possessing a house.

च्याय् *çāy*, (fem.) a place. च्यायिवोल् *çāyiwōl*ᵃ, च्यायिवाज्यञ् *çāyiwājěñ*, possessing a place.

कूर् *kūr*ᵃ, a daughter. कोरिवोल् *kōriwōl*ᵃ, कोरिवाज्यञ् *kōriwājěñ*, possessing a daughter.

न्यचिव् *něcyuv*ᵃ, a son. न्यचिविवोल् *něciv*ⁱ*wōl*ᵃ, न्यचिविवाज्यञ् *něciv*ⁱ*wājěñ*, possessing a son.

But,—

गुपुन् *gupun*, a quadruped. गुपनवोल् *gupanwōl*ᵃ, possessing herds.

गर *gar*ᵃ, a house. { गर्वोल् *garwōl*ᵃ, the master of a house. गरवोल् *garawōl*ᵃ, possessing a house.

10. ग्राख् *grākh*, fem. ग्राकञ् *grakañ*. This may be used instead of वोल *wōl*ᵃ in the same sense (iv. 24). Thus,—

ल्वर् *lạr*ᵃ, a house, लरिग्राख् *larigrākh*, fem. लरिग्राकञ् *larigrākañ*, possessing a house, and so on.

11. ह्यंत् *hạt*ᵃ, fem. ह्यंच् *hạtṣ*ᵃ. This suffix denotes inconvenience experienced by the mind or feeling, but not by the corporeal body (iv. 25). The usual rule is followed in adding the suffix. Thus,—

न्यंद्र् *nyandᵃr* (fem.), sleep, न्यंद्रिह्यंत् *nyandᵃrihạt*ᵃ, fem. न्यंद्रिह्यंच् *nyandᵃrihạtṣ*ᵃ, afflicted with sleep.

त्रेष् *trēṣ* (masc.) thirst. त्रेषह्यंत् *trēṣahạt*ᵃ, thirsty.

ब्वछ *bŏch*ᵃ, hunger. ब्वछह्यंत् *bŏchahạt*ᵃ, hungry.

क्रूद् *krūd*, anger. क्रूदह्यंत् *krūdahạt*ᵃ, angry.

गुम *guma*, sweat. गुमह्यंत् *gumahạt*ᵃ, sweaty.

ताफ् *tāph*, sunshine.	तापहॅतु *tāpahaṭᵘ*, feeling the sunshine.
तूर् *tūr*, cold.	तूरिहॅतु *tūrihaṭᵘ*, feeling cold.
आर् *ār*, pity.	आरहॅतु *ārahaṭᵘ*, pitiful.

In the two following the adjectives formed do not necessarily refer to mind or feeling,—

लव *lawᵒ*, dew.	लवहॅतु *lawahaṭᵘ*, dewy.
ताव् *tāw*, warmth.	तावहॅतु *tāwahaṭᵘ*, warm.

E.g., तावहॅचु बुतराथ् *tāwahaṭṣᵘ butarāth*, warm ground.

12. व्यॅतु *vyaṭᵘ*, fem. व्यॅचु *vyaṭṣᵘ*. This suffix is added in the case of the words मंदछ *mandachᵒ*, shame; मोद् *mōdᵒ*, respect; मान *mānᵒ*, honour, in the same meaning as वोल् *wōlᵒ* (iv. 26). Thus,—

मंदछव्यॅतु *mandachavyaṭᵘ*,	fem.	मंदछव्यॅचु *mandachavyaṭṣᵘ*, ashamed.
मोदव्यॅतु *mōdavyaṭᵘ*,	fem.	मोदव्यॅचु *mōdavyaṭṣᵘ*, respected.
मानव्यॅतु *mānavyaṭᵘ*,	fem.	मानव्यॅचु *mānavyaṭṣᵘ*, honoured.

So also,—

वसांव्यॅतु *barsāvyaṭᵘ*,	fem.	वसांव्यॅचु *barsāvyaṭṣᵘ*, wealthy.

13. आन् *ān*, fem. आन् *ān*, added to the words दंद् *dand*, a tooth, and नस् *nast*, a nose, in a bad sense (iv. 28).

Thus, दंदान् *dandān*, fem. दंदान् *dandān*, having an ugly tooth.

नस्तान् *nastān*, having an ugly nose.

14. उ् ᵘ, fem. ऊ् ᵘ. This is used with the same words in the same meaning (iv. 29).

नॅसु *naṣtᵘ*, fem.	नॅसू *naṣtᵘ*.
दॅदु *daṇdᵘ*, fem.	दॅदू *daṇdᵘ*.

15. ऊर् *ūrᵘ*, fem. ऊर् *ūrᵘ*, a variant of the preceding (iv. 29).

नसूर् *nastūrᵘ*, fem. नसूर् *nastūrᵘ*.

दंदूर् *dandūrᵘ*, fem. दंदूर् *dandūrᵘ*.

16. अट् *aṭ*, fem. अट् *aṭ*, added to वैंस् *waīs*, age, gives वैंसट् *waīsaṭ*, meaning 'very old.' Added to रॅष् *rᵒṣ*, malice, we have रॅषट *rᵒṣaṭ*, malicious (iv. 34, 35).

17. इट् *it*, fem· इट् *it*, is used as follows (iv. 36–38).

From ᱹअ़च् *ạch*[1], the eye.	ᱹअ़चीट् *achīt*, fem. ᱹअ़चीट् *achīt*, having the evil eye.
रूप् *rūp*, beauty.	रूपिट् *rūpit*, very beautiful.
लूब् *lūb*, desire.	लूबिट् *lūbit*, covetous.
ज़्यव् *zyav*, tongue.	ज़्यविट् *zĕvit*, a calumniator.

18. ऊठ् *ūṭh*, fem. ऊठ् *ūṭh*, as in ल्यख् *lyăkh* (fem.) abuse, ल्यकल् *lyakal*, or ल्यकलूठ् *lyakalūṭh*, abusive (iv. 39).

The following suffixes form **Abstract Nouns.**

19. यर् *ar*, (masc.) added to adjectives (iv. 41). This termination is added in the usual way to the form of the case of the agent, *i* becoming *y*. Thus,—

ब्युᱹ *byuy*[u], stale.	ब्यियर् *biyyar*, staleness.
त्सरᱹ *tsạr*[u], much.	त्सर्यर् *tsaryar*, excess.
फहुरᱹ *phahur*[u], hard.	फहर्यर् *phaharyar*, hardness.
नवᱹ *nạv*[u], new.	नव्यर् *navyar*, newness.
पपᱹ *pạp*[u], ripe.	पप्यर् *papyar*, ripeness.
फप्ᱹ *phạph*[u], stammering.	फफ्यर् *phaphyar*, stammeringness.
ग्वबᱹ *gŏb*[u], heavy.	ग्वब्यर् *gŏbyar*, heaviness.
ओमᱹ *ōm*[u], unripe.	आम्यर् *āmyar*, unripeness.
गय्ᱹ *gạç*[u], silent.	गय्यर् *gaçyar*, silence.
त्सोषᱹ *tsōṣ*[u], acrid.	त्साष्यर् *tsāṣyar*, acridity.
फरिशᱹ *pharīç*[u], hard (fem).	फᱹरिश्यर् *phạr*[i]*çyar*, hardness.

The last adjective is only used in the feminine.

The main word is also subject to the following changes,—

(*a*) If the adjective is of three or more syllables, यर *ar* becomes यार् *ār* (iv. 42). Thus,—

व्वज़ुलᱹ *wŏzul*[u], red.	व्वज़ज्यार् *wŏzajyār*, redness (see *i.* below).
म्वकुल *mŏkul*[u], free.	म्वकज्यार् *mŏkajyār*, free.

(*b*) This rule is, however, not universal (iv. 44). Thus,—

अप॑ज़ु *apạz*^{u}, untruthful.	अपज़र् *apazar*, untruthfulness (see *h.* below).
कृह॑नु *kṛhạn*^{u}, black.	कृहञ़र् *kṛhañar*, blackness (see *h.* below).
काच़ुरु *kāt̲s̲ur*^{u}, tawny.	काच़र्यर् *kāt̲s̲aryar*, tawniness.
कावुरु *kāwur*^{u}, dark-blue.	कावर्यर् *kāwaryar*, dark-blueness.
कृपुनु *kṛpun*^{u}, miserly.	कृपञ़र् *kṛpañar* miserliness (see *h.* below).
कायुरु *kāyur*^{u}, pinewood.	कायर्यर् *kāyaryar*, the nature of pinewood.
खोवुरु *khōwur*^{u}, left (not right).	खोवर्यर् *khōwaryar*, leftness.
ग्यश्योमु *gĕçyōm*^{u}, light black.	ग्यश्याम्यर् *gĕçyāmyar*, light blackness.
च़तुरु *t̲s̲atur*^{u}, skilful.	च़त्र्यर् *t̲s̲at*^{a}*ryar*, skilfulness.
विस॑मु *wisạm*^{u}, uneven.	विसम्यर् *wisamyar*, unevenness.

(*c*) The word टोठु *ṭōṭh*^{u}, dear, beloved, forms टाठञ़ार् *ṭāṭhañār* or टाछ्यर् *ṭāchyar*, belovedness (iv. 43).

(*d*) When the word हश् *haç*, a mother-in-law, takes अर् *ar*, the word हशर् *haçar* is only used in low abuse. The right word for the condition of a mother-in-law is हशतोनु *haçatōn*^{u} (No. 27) (iv. 45).

(*e*) The suffix is optional in the case of the following (iv. 46).

क्व॑बु *kọ̆b*^{u}, hunchbacked.	क्व॑बु *kọ̆b*^{u}, or क्वब्यर् *kŏbyar*, hunchbackedness.
ग॑शु *gạç*^{u}, silent.	ग॑शु *gạç*^{u} or गश्यर् *gaçyar*, silence.

(*f*) When the adjective ends in *u-mātrā* preceded by क् *k*, ख् *kh*, or ग् *g*, these letters become च् *c*, छ् *ch*, and ज् *j* respectively (iv. 47). Thus,—

निकु *nyuk*^{u}, little.	निच्यर् *nicyar*, littleness.
ट॑कु *tạk*^{u}, sharp.	टच्यर् *tacyar*, sharpness.
ह्व॑खु *họ̆kh*^{u}, dry.	ह्वछ्यर् *hŏchyar*, dryness.

त्रिख् *tryukh*ª, clever.	त्रिचर् *trichyar*, cleverness.
द्रुग् *drŏg*ª, dear.	द्रुज्यर् *drŏjyar*, dearness.
स्रुग् *srŏg*ª, cheap.	स्रुज्यर् *srŏjyar*, cheapness.

Exceptions are (iv. 48), *vide ante*, pp. 32, 182,—

चुक् *ṯsŏk*ª, sour.	चुक्यर् *ṯsŏkyar*, sourness.
खूंख् *khũkh*ª, speaking through the nose.	खूंख्यर् *khũkhyar*, nasality of voice.

(*g*) Under similar conditions, ट् *ṭ* becomes च् *c*, ठ् *ṭh* becomes छ् *ch*, ड् *ḍ* becomes ज् *j*, and ण् *ṇ* becomes ञ् *ñ* (iv. 49). Thus,—

म्वट् *mŏṭ*ª, fat.	म्वच्यर् *mŏcyar*, fatness.
गट् *gaṭ*ª, dark.	गच्यर् *gacyar*, darkness.
द्रोंठ् *drõṭh*ª, hard.	द्राँछ्यर् *drãchyar*, hardness.
मूंठ् *mũṭh*ª, lazy.	मैंछ्यर् *maĩchyar*, laziness.
म्वंड् *mŏṇḍ*ª, blunt.	म्वंञ्यर् *mŏñjyar*, bluntness.
बड् *baḍ*ª, great.	बज्यर् *bajyar*, greatness.
प्रोण् *prōṇ*ª, old.	प्राञर् *prāñar*, oldness, (see *h*, for elision of *y*).

(*h*) Under similar circumstances, त् *t* becomes च्र् *ṯs*, थ् *th* becomes च्ह् *ṯsh*, द् *d* becomes ज़्, and न् *n* becomes ञ् *ñ*, after all of which य् *y* is elided (iv. 50, 51). Thus,—

तत् *ṯat*ª, hot.	तच्र् *taṯsar*, heat.
मत् *ṯat*ª, madness.	मच्र् *maṯsar*, madness.
रत् *r*ª*t*ª, good.	रच्र् *r*ª*ṯsar*, health of body (iv. 41).
वथ् *wṯh*ª, open.	वच्ह् *waṯshar*, openness.
थद् *thad*ª, high.	थज़र् *thazar*, height.
मंद् *mand*ª, sick.	मंज़र् *manzar*, sickness.
तन् *tan*ª, thin.	तञर् *tañar*, thinness.
गुमन् *gumn*ª, slightly dirty.	गुमञार् *gumañār* (see *a*) slight dirtiness.
तमन् *taman*ª, black.	तमञार् *tamañār*, blackness.
तूरन् *tūran*ª, cold.	तूरञार् *tūrañār*, coldness.

अ॑नु *ạn*^{u}, blind.	अञर् *añar*, blindness.
कटमलिनु *kaṭamalyun*^{u}, half-clean.	कटमलिञार् *kaṭamaliñār*, half-cleanness.

From the word पनुनु *panun*^{u}, own, we get irregularly पानञार् *pānañār*, selfness.

Similarly य् *y* is elided in other cases after modified consonants. Thus, in प्राञर् *prāñar* in (*g*) above, so,—

छ॑त्सु *tshọ̆ts*^{u}, empty.	छत्सर् *tshōtsar*, emptiness.
अ॑छु *ạtsh*^{u}, weak.	अछर् *atshar*, weakness.
प॑ज़ु *pạz*^{u}, true.	पज़र् *pazar*, truth.

(*i*) So also, when *u-mātrā* is preceded by ल् *l*, the ल् *l* becomes ज् *j* (iv. 52). Thus,—

ख॑लु *khạl*^{u}, open.	खज्यर् *khajyar*, openness.
वूलु *wūl*^{u}, fickle.	वोज्यर् *wōjyar*, fickleness.
कुमुलु *kumul*^{u}, delicate (see *a*).	कुमज्यार् *kumajyār*, delicateness.
व्वज़ुलु *wŏzul*^{u}, red.	व्वज़ज्यार् *wŏzajyār*, redness.
ज़ा॑युलु *zạ̄yul*^{u}, fine.	ज़ा॑य्ज्यार् *zạ̄y*^{a}*jyār*, fineness.
पिशुलु *piçul*^{u}, soft.	पिशज्यार् *piçajyār*, softness.

(*j*) Similarly we have (iv. 53),—

त्रकुरु *trakur*^{u}, hard.	त्रकज्यार् *trakajyār* or त्रकर्यर् *trakaryar*, hardness (see *b*).

(*k*) Similarly ह् *h* becomes श् *ç* (iv. 54). Thus,—

हिहु *hyuh*^{u}, like.	हिश्यर् *hiçyar*, similarity.
त्सोहु *tsōh*^{u}, acrid.	त्साश्यर् *tsāçyar*, acridity.

(*l*) Similarly स् *s* optionally becomes छ् *tsh* (iv. 55). Thus,—

कूँसु *kũs*^{u}, youngest.	कैँछर् *kaĩtshar* or कैँसर् *kaĩsar*, the condition of a youngest son.

20. ईमी *imī* (fem.). This is optionally used instead of अर् *ar*, after ब॑डु *bạḍ*^{u}, great, thus बडीमी *baḍīmī*, or बज्यर् *bajyar* (No. 19, *g*), greatness (iv. 56).

CENTRAL LIBRARY

21. यारू *yā̤rᵘ* (fem.). This is optionally used instead of अर् *ar*, in the two following words (iv. 57).

श्रूच़ु *çrūtsᵘ*, pure.	श्रूच़ियारू *çrūtsⁱyā̤rᵘ* or श्रोच़र् *çrōtsar* (20, *h*), purity.
छ़ुटु *tshyạṭᵘ*, impure.	छ़ुटियारू *tshĕṭⁱyā̤rᵘ* or छ़ुच्यर् *tshĕcyar* (20, *g*), impurity.

22. ज़् *z* (fem.). This is added to words ending in योरु *yōrᵘ*. Thus from (iv. 58).

मञ्ज़िमु-योरु *manzyumᵘ-yōrᵘ*, a go-between (see No. 8).	मञ्ज़िमू-यारज़् *manzimᵘ-yārᵃz* (the fem. form of मञ्ज़िमु *manzyumᵘ* is used), the office of a go-between.
पज़ियोरु *pạzⁱyōr*, truthful.	पज़ियारज़् *pạzⁱyārᵃz*, truthfulness.
अपज़ियोरु *apạzⁱyōrᵘ*, untruthful.	अपज़ियारज़् *apạzⁱyārᵃz*, untruthfulness.

So (cf. No. 21).

श्रूच़ियारुज़् *çrūtsⁱyā̤rᵘz*, purity, and

छ़ुटियारुज़् *tshĕṭⁱyā̤rᵘz*, impurity.

23. इल् *il* (fem.), used to form abstract nouns from substances, not from adjectives (iv. 59).

Thus, पण्डिथ् *paṇḍith*, a paṇḍit, पण्डितिल् *pạṇḍⁱtil*, the condition of a paṇḍit.

छान् *chān*, a carpenter.	छानिल् *chā̤nil*, the condition of a carpenter.
गोर् *gōr*, a priest.	गूरिल् *gūril*, the condition of a priest.

This suffix cannot be used with every word. Sometimes No. 24, must be used. We cannot for instance, say, from द्वसिल् *dŏsil*, a plasterer, द्वसिलिल् *dọ̆sⁱlil*, the office of a plasterer. We can only say द्वसिलाज़् *dọ̆sⁱlā̤z* (iv. 60).

The word लाँछ् *lā̤tsh*, a eunuch, is irregular. It forms लाँछिल् *lā̤tshil*, or लूँछिल् *lū̃tshil* (iv. 62).

24. आ॑ज़् *ā̤z*, (fem.), used optionally instead of the proceeding (iv. 59, 60). Thus,—

पा॑ण्डिता॑ज़् *paṇḍ*ⁱ*tā̤z*, the condition of a paṇḍit.

छाना॑ज़् *chānā̤z*, the condition of a carpenter.

गोरा॑ज़् *gōrā̤z*, the condition of a priest.

द्व॑सिला॑ज़् *dǫ̆s*ⁱ*lā̤z*, the condition of a plasterer.

25. इला॑ज़् *ilā̤z*, (fem.), is a compound of the two preceding which is sometimes used (iv. 61).

म॑तु *mạt*ᵘ, a madman. मतिल् *matil* or म॑तिला॑ज़् *mạt*ⁱ*lā̤z*, the condition of a madman. If म॑तु *mạt*ᵘ is used to mean 'mad,' (as an adjective), its abstract noun would be मत्सर् *matsar* (No. 19, *h*).

ब्रेठ् *brēṭh*, ignorant. ब्रीठिला॑ज़् *brīṭh*ⁱ*lā̤z*, ignorance.

So गूरिला॑ज़् *gur*ⁱ*lā̤z*, छा॑निला॑ज़् *chā̤n*ⁱ*lā̤z*.

26. वय् *way*, (fem.), used to mean the wages of any act (ix. ii. 85–87). Thus,—

छानवय् *chānaway* (fem.), the wages of a carpenter.

द्वसिल्वय् *dǫ̆sil*ᵃ*way* (fem.), the wages of a plasterer.

From नाव् *nāv*, a boat, we have नावय् *nāvay*, the hire of a boat.

From बोरु *bōr*ᵘ or बार् *bār*, a burden, we have बा॑रूवय् *bā̤r*ᵘ*vay*, the wages of a porter.

27. तोनु *tōn*ᵘ (masc.). This gives a meaning of **relationship**. It is added, as usual to the agent form (iv. 63). Thus,—

मोलु *mōl*ᵘ, a father. मा॑लितोनु *mā̤l*ⁱ*tōn*ᵘ, fatherhood.

मा॑जू *mā̤j*ᵘ, a mother. माजितोनु *mājitōn*ᵘ, motherhood.

बोयु *bōy*ᵘ, a brother. बा॑यितोनु *bā̤y*ⁱ*tōn*ᵘ, brotherhood.

पुथ्र् *puth*ᵃ*r*, a son. पुत्रतोनु *put*ᵃ*ratōn*ᵘ, sonhood.

हश् *haç*, mother-in-law. हशतोनु *haçatōn*ᵘ, mother-in-law-hood.

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28. पोनु *pōn*^{u}, used instead of No. 27 when the relationship is not intimate (iv. 63). Thus,—

व्यस् *vyas*, a comrade.	व्यसपोनु *vyasapōn*^{u}, comradeship.
दाय् *dāy*, a nurse.	दायपोनु *dāyapōn*^{u}, nursehood.
पोजु *pōj*^{u}, low.	पा॑जिपोनु *pā̤j*^{i}*pōn*^{u}, lowness of position (in a household).

29. उत् *ut* (masc.), used with the following words (iv. 64).

शथ्र् *çath*^{a}*r*, an enemy.	शत्रुत् *çat*^{a}*rut*, enemyhood.
म्यथ्र् *myath*^{a}*r*, a friend.	म्यत्रुत् *myat*^{a}*rut*, friendhood.
पितुर् *pitur*, a father.	पितुरुत् *piturut*, fatherhood.
ऋ॑षु *ṛṣ*^{u}, a saint.	ऋ॑ष्युत् *ṛṣyut*, sainthood.
बन्द् *band*, a relation.	बन्दुत् *bandut*, relationship.

30. उन् *un* (masc.), used with the following word (iv. 65).

मैथ् *maith*, a corpse.	मैतुन् *maitun*, the condition of a corpse.

31. उस् *us* (masc.), used with the following words (iv. 66, 67).

म्वण्ड् *mŏṇḍ*, a widow.	म्वण्डुस् *mŏṇḍus*, widowhood.
द्व॑बु *dob*^{u}, a washerman (Cf. p. 34).	द्वबुस् *dŏbus*, a washerman's club, but द्वबिल् *dŏbil*, the condition of a washerman (No. 23).

32. ब॑दु *bạd*^{u} (masc.), used in the following (iv. 68).

स्वन् *sŏn*, a co-wife.	स्वनब॑दु *sŏnbạd*^{u}, co-wifehood.

[So also पित्रिब॑दु *pit*^{a}*r*^{i}*bạd*^{u}, fatherhood; बा॑यिब॑दु *bā̤y*^{i}*bạd*^{u}] or बा॑जिब॑दु *bā̤j*^{i}*bạd*^{u}, brotherhood, commensality (iv. 69).

The suffix is used with the numerals 100, and above (iv. 70), as follows:—

हथ् *hăth*, a hundred.	हतब॑दु *hatabạd*^{u}, hundreds.
सास् *sās*, a thousand.	सासब॑दु *sāsabạd*^{u}, thousands.
लछ् *lăch*, a hundred thousand.	लछ्यब॑दु *lachyabạd*^{u}, hundreds of thousands.

Applied to vegetables, it means a bundle,—

हाख् *hākh*, spinach.	हाकबंद् *hākabạd*ª, a bundle of spinach.
मुज् *muj*, a radish.	मुजिबंद् *mujibạd*ª, a bundle of radishes.
ग्वग्ज् *gŏgªj*, a turnip.	ग्वग्जिबंद् *gogªjibạd*ª, a bundle of turnips.

In all the above, as usual, the suffix is added to the form of the agent. मुज् *muj*, may also be मुजि *mujⁱ*, and it would then form मुच्चबंद् *mujčbạd*ª. Cf. No. 82 post.

33. बठ् *băṭh* (fem.), used in the following, बाजिबठ् *bājⁱbăṭh*, commensality (see No. 32), (iv. 69).

34. उल् *ulª* fem. ञ् *ªjᵉ*, used to form **adjectives** as follows (iv. 72–87).

गाट *gāṭª*, wisdom.	गाटुल् *gāṭulª*, fem. गाट्ञ् *gāṭªjᵉ*, skilful.
कण्ड् *kŏṇḍ*, a large spring, also a large round earthen vessel.	कण्डुल् *kŏṇḍulª*, fem. कण्ड्ञ् *kŏṇḍªjᵉ* circular.
गण्ड् *gaṇḍ*, a knot.	गण्डुल् *gaṇḍulª*, fem. गण्ड्ञ् *gaṇḍªjᵉ*, in quantities, wholesale.
ग्थ् *gªth*, current of a river.	ग्तुल् *gªtulª*, fem. ग्त्ञ् *gªtªjᵉ*, excessive, very much.
गद् *gad*, (not used).	गदुल् *gadulª*, fem. गद्ञ् *gadªjᵉ*, very much.
टठ् *ṭaṭhª*, a weight (usually of grain) weighing twelve seers.	टठुल् *ṭaṭhulª*, fem. टठ्ञ् *ṭaṭhªjᵉ*, large enough to hold a *ṭaṭhª*.
दगु *dŏgª*, a fist.	दगुल् *dŏgulª* fem. दग्ञ् *dŏgªjᵉ*, shaped like a fist, lumpish.
पत *pŏtª*, a child.	पतुल् *pŏtulª*, fem. पत्ञ् *pŏtªjᵉ*, an image, an idol.

म्वल् *mŏl*, price.	म्वलुलु *mŏlul*^{u}, fem. म्वल्जू *mŏl*^{ə}*j*^{ū}, costly, high-priced.
साद् *sād*, taste.	सादुलु *sādul*^{u}, fem. साद्जू *sād*^{ə}*j*^{ū}, taste, nice to eat.
क्वछ् *kŏtsh*, bag.	क्वछुलु *kŏtshul*^{u}, fem. क्वछ्जू *kŏtsh*^{ə}*j*^{u}, a porter.
छुख् *chŏkh*, cleansing.	छुकुलु *chŏkul*^{u}, fem. छुक्जू *chŏk*^{ə}*j*^{ū}, clear, distinct.
च़ठ् *tsăṭh*, cutting.	च़टुलु *tsaṭul*^{u}, fem. च़ट्जू *tsaṭ*^{ə}*j*^{ū}, a thief.
पथ् *păth*, trust.	पतुलु *patul*^{u}, fem. पत्जू *pat*^{ə}*j*^{ū}, a raft (fem. a mat).
च़थ् *tsŏth*, the anus.	च़तुलु *tsŏtul*^{u}, fem. च़त्जू *tsŏt*^{ə}*j*^{ū}, a sodomite.
राथ् *rāth*, night.	रातुलु *ratul*^{u}, night-time.
द्वह् *dŏh*, day.	दुहुलु *duhul*^{u}, day-time.
मून् *mūn*, wool.	मुनुलु *munul*^{u}, fem. मुन्जू *mun*^{ə}*j*^{ū}, woollen (with short antepenult).

35. युलु *yul*^{u}, fem. इजू *ij*^{ū}, used to form adjectives as follows (iv. 88–95).

टॅपु *ṭap*^{u}, ringlets.	टप्युलु *ṭapyul*^{u}, fem. टपिजू *ṭapij*^{ū}, having much hair.
जट *jaṭ*^{u} (pl.), matted hair.	जट्युलु *jaṭyul*^{u}, fem. जटिजू *jaṭij*^{ū}, having matted hair.
दाह् *dāh*, burning.	दह्युलु *dahyul*^{u}, fem. दहिजू *dahij*^{ū}, piteous (with short antepenult).
रस् *ras* flavour.	रस्युलु *rasyul*^{u}, fem. रसिजू *rasij*^{ū}, full of flavour, imparting flavour. *E.g.*, रस्युलु छुह् ग्यवान् *rasyul*^{u} *chuh gyawān*, he is singing sweetly.

मछ् *mătsh*, consolation.	मछ्युलु *matshyul*^{u}, fem. मछिजू *matshij*^{ū}, consolatory.
स्र्यह् *srĕh*, affection.	स्रिह्युलु *srihyul*^{u}, fem. स्रिहिजू *srihij*^{ū}, affectionate (with change of antepenult, vowel).
मिष् *miṣ*, a rag-nail, a piece of loose skin at the nail, a dolly-idler.	मिष्युलु *miṣyul*^{u}, the same as *miṣ*; also a splinter or thorn under the nail.
स्यख् *syăkh*, sand.	स्यक्युलु *sĕkyul*^{u}, fem. स्यकिजू *sĕkij*^{ū}, sandy, *e.g.*, स्यकिजू बुतराथ् *sĕkij*^{ū} *butarāth*, sandy soil; also sandy-tasty, mealy, of fruit.
मा॑जू *mā̤j*^{ū}, a mother.	माज्युलु *mājyul*^{u}, shy, tied to his mother's apron strings.

36. युनु *yun*^{u}, fem. इञ् *iñ*, occurs as follows (iv. 96).

मल् *mal*, dirt.	मल्युनु *malyun*^{u}, fem. मलिञ् *maliñ*, dirty.

The termination also implies measure or weight (iv. 109). Thus,—

त्रख् *trăkh*, a weight or measure of four and three quarter seers.	त्रा॑क्युनु कठ् *trā̤kyun*^{u} *kăṭh*, a ram weighing a *trăkh*; त्रा॑क्युनु न॑टु *trā̤kyun*^{u} *nạṭ*^{u}, a jar holding a *trăkh*.
सेर् *sēr*, a seer.	सीर्युनु थाल् *sīryun*^{u} *thāl*, a dish holding a seer.
खार् *khār*, a measure of sixteen *trăkhs*.	खा॑र्युनु बोरु *khā̤ryun*^{u} *bōr*^{u}, a load weighing a *khār*.
च़त्रोकु *tsŏtrōk*^{u}, a measure of four *trăkhs*.	च़त्रा॑क्युनु *tsŏtrā̤kyun*^{u}, containing that measure.
पल् *pal*, four *tolahs*.	पल्युनु *palyun*^{u}, weighing four tolahs.
पाँज़ुवु *pā̃zuv*^{u}, half a *trăkh*.	पाँज़शुनु *pā̃zaçun*^{u}, measuring half a *trăkh* (iv. 110).

CENTRAL LIBRARY

It will be observed that all the above are more or less irregular.

The suffix is also used with the words for sixty and seventy (iv. 111).

शेठ् *çēṭh*, sixty.	शीठ्युनु *çīṭhyun*^{u}, worth sixty.
सतथ् *satath*, seventy.	सतत्युनु *satatyun*^{u}, worth seventy.

We cannot do this with other numbers. Thus we say दहन् ह॑न्दु दाँद् *dahan hạnd*^{u} (genitive) *dā̃d*, a bullock worth ten.

It is also used with pronouns (iv. 112). Thus,—

त्यूतु *tyūt*^{u}, so much.	तीत्युनु *tītyun*^{u}, worth so much.
य्यूतु *yyūt*^{u}, how much.	यीत्युनु *yītyun*^{u}, worth how much.
कूतु *kūt*^{u}, how much ?	कू॑त्युनु *kụ̄tyun*^{u}, worth how much ?
यूतु *yūt*^{u}, this much.	इंत्युनु *yītyun*^{u}, worth this much.

We also have (iv, 113).

वरिह्य् *warihy*, a year.	वा॑र्ष्युनु *wạ̄rṣyun*^{u}, of one year ; one year old.

37. उनु *un*^{u}, is used as follows (iv. 97–98).

कूटु *k*^{ū}*ṭ*^{u}, a beam.	कूटुनु *kūṭun*^{u}, a small beam, a stick.
दग् *dag*, a blow.	दगुनु *dagun*^{u}, a club, a mace.

38. र् *r*, is used with the following words to signify profession or calling (iv. 99–108).

रंग् *raŋg*, colour.	रंग्र् *raŋg*^{a}*r*, a dyer.
स्वन् *sŏn*, gold.	स्वन्र् *sŏn*^{a}*r*, a goldsmith.
मन् *man*, a precious stone.	मन्र् *man*^{a}*r*, a lapidary.
च़म् *tsam*, skin.	च़म्र् *tsam*^{a}*r*, a leather worker.
दाँद् *dā̃d*, a bull.	दाँद्र् *dā̃d*^{a}*r*, a vegetable seller.
काँद् *kā̃d* (not used).	काँद्र् *kā̃d*^{a}*r*, a baker.
डास् *ḍās*, destruction.	डास्र् *ḍās*^{a}*r*, a destroyer.
फास् *phās*, discord.	फास्र् *phās*^{a}*r*, a causer of discord.
बंग *baŋg*^{a}, Indian hemp.	बंग्र् *baŋg*^{a}*r*, a hemp-smoker.
बम् *bam*, an impediment.	बम्र् *bam*^{a}*r*, an impeder.
लम *lam*^{a}, delay.	लम्र् *lam*^{a}*r*, a delayer.
लाब् *lāb*, interest.	लाब्र् *lāb*^{a}*r*, a money lender.

साल् *sāl*, invitation. — सालर् *sālᵃr*, a member of a bridegroom's party.

लूठ् *lūṭh*, plunder. — लूटर् *lūṭᵃr*, a plunderer.

ब्रम् *bram*, delusion. — ब्रमर् *bramᵃr*, a deluder.

Irregular is,—

लूब् *lūb*, covetousness. — लूदर् *lūdᵃr*, a coveter.

[Others write these words रंगुर् *rangurᵃ*, सोनुर् *sõnurᵃ*, &c. Thus making the termination उर् *urᵃ*, not र् *r*].

39. गर् *gaṛᵃ*, (masc.), fem. गर् *gaṛᵃ*, used to signify a profession relating to anything sold (ix. ii. 88, 89). Thus,—

लायगर् *lāĕgaṛᵃ*, (लाय *lāĕ* is fem. pl.), a seller of parched grain.

गंडनगर् *gaṇḍangaṛᵃ*, a book binder.

कंगञगर् *kaṇgañᵃ*-(plur.)-*gaṛᵃ*, a comb-seller.

मंडनगर् *maṇḍangaṛᵃ*, a man who kneads cloth in water (to soften it).

This is not used with words which have other forms, like सनर् *sõnᵃr*, in preceding list.

From दाञ *dāñĕ*, paddy, we have, irregularly, दांगर् *dãgaṛᵃ*, a paddy seller, *vide ante*, p. 70.

40. युम् *yumᵃ*, fem. इम् *imᵃ*, used to form ordinals (iv. 114.)

अख् *ăkh*, one. — अक्युम् *akyumᵃ*, fem. अकिम् *akimᵃ*, first.

दह् *dah*, ten. — दह्युम् *dahyumᵃ*, fem. दहिम् *dahimᵃ*, tenth.

वुह् *wuh*, twenty. — वुह्युम् *wuhyumᵃ*, twentieth.

हथ् *hăth*, a hundred. — हत्युम् *hatyumᵃ*, hundredth.

सास् *sās*, a thousand. — सास्युम् *sāṣyumᵃ*, thousandth.

कत्स् *kaṭsᵃ* (masc.), कत्स *katsᵃ* (fem.), how many? (plur.) — कत्युम् *katsyumᵃ*, fem. कत्सिम् *katsimᵃ*, which out of many?

यीति *yītⁱ* (masc. plur.), how many. — यीत्युम् *yītyumᵃ*, fem. यीतिम् *yītimᵃ*, which out of many.

तीति *tīt*^{i}, that many.

तीत्युम् *tītyum*^{a}, fem. तीतिम् *tītim*^{a}, that out of many.

ईति *yīt*^{i}, this many.

ईत्युम् *yītyum*^{a}, fem. ईतिम् *yītim*^{a}, this out of many.

41. र् ^{i}, fem. र् *i*, denotes place of origin (iv. 117). Thus,—

सोव्पोर् *sōvpōr*, Sopor, name of a town.

सोव्पूरि नाव् *sōvpūr*^{i} *nāv*, a boat of Sopor; fem. सोव्पोरि *sōvpōri*.

ईरान् *yīrān* Persia.

ईरांनि गुर् *yīrāṇ*^{i} *gur*^{a}, a Persian horse; fem. ईरानि *yīrāni*.

चीन् *cīn*, China.

चीनि खोस् *cīn*^{i} *khōs*^{a}, a China cup; fem. चीनि *cīni*.

हिन्दुस्तान् *hindustān*, India.

हिन्दुस्तांनि कपुर् *hindustāṇ*^{i} *kapur*, Indian cloth; fem. हिन्दुस्तानि *hindustāni*.

42. उर् *ur*^{a}, used as follows (iv. 118).

कश्मीर् *kaçīr* (fem.), Kashmīr.

कांयुर् कंग् *kāçur*^{a} *kŏŋg* Kashmīrī saffron.

So कांयुर् पश्मीन *kāçur*^{a} *paçmīn*^{a}, Kashmīrī *pashmeena*; कांयिर् कठ *kāçir*^{a} *kŏṭh* (fem.), aucklandia costus from Kashmīr.

43. उक् *uk*^{a}, fem. च् *c*^{a}. This is used to signify origin, either in place or time. If उक् *uk*^{a} is preceded by य् *y*, युक् *yuk*^{a} becomes *ic*^{a} in the feminine. It is really one of the genitive particles (p. 37) (iv. 119, 120).

कति *kati*, where?

कत्युक् *katyuk*^{a}, fem. कतिच् *katic*^{a}, of where?

तति *tati*, there.

तत्युक् *tatyuk*^{a}, fem. ततिच् *tatic*^{a}, of there.

इति *yiti*, here.

इत्युक् *yityuk*^{a}, fem. इतिच् *yitic*^{a}, of here.

यति *yati*, where.

यत्युक् *yatyuk*^{a}, fem. यतिच् *yatic*^{a}, of where.

हति *huti*, here.

हत्युक् *hutyuk*^{a}, fem. हतिच् *hutic*^{a}, of here.

कर् *kar*, when.	करुकॖ *karuk*^{u}, fem. कर॑चॖ *karạc*^{ū}, of what time.
गर *gar*^{a}, a house.	गरुकॖ *garuk*^{u}, fem. गर॑चॖ *garạc*^{ū}, domestic.
राथ् *rāth*, yesterday.	रातुकॖ *rātuk*^{u}, fem. रात॑चॖ *rātạc*^{ū}, of yesterday.
परुसॖ *parus*^{u}, the day before yesterday.	पर्सुकॖ *par*^{a}*suk*^{u}, fem. पर्स॑चॖ *par*^{a}*sạc*^{ū}, of the day before yesterday.
दछ्युनॖ *dachyun*^{u}, south.	द॑छिन्युकॖ *dạch*^{i}*nyuk*^{u}, of the south.
खोवुरॖ *khōwur*^{u}, north.	खोव्र्युकॖ *khōw*^{a}*ryuk*^{u}, of the north.

The word अज़् *az*, to-day, makes अज्युकॖ *azyuk*^{u}, of to-day.

44. युमॖ *yum*^{u} (or इमॖ), fem. इमॖ *im*^{ū}. This termination is added to the post-position पा॑रि *pār*^{i}, beyond (cf. No. 70). When phrases like कमि पा॑रि *kami pạ̄r*^{i} occur, the मि *mi* of the pronoun is elided when this suffix is added (iv. 120). Thus,—

पा॑रि *pạ̄r*^{i}, beyond.	पा॑र्युमॖ *pạ̄ryum*^{u}, fem. पा॑रिमॖ *pạ̄rim*^{ū}, born in the country beyond (the hills). May also be written पा॑रिमॖ and so throughout.
कमिपा॑रि *kamipạ̄r*^{i}, in what direction.	कपा॑र्युम *kapạ̄ryum*^{u}, of what direction.
तमिपा॑रि *tamipạ̄r*^{i}, in that direction.	तपा॑र्युमॖ *tapạ̄ryum*^{u}, of that direction.
यमिपा॑रि *yamipạ̄rī*, in what direction.	यपा॑र्युमॖ *yapạ̄ryum*^{u}, of what direction.
हुमिपा॑रि *humipạ̄r*^{i}, beyond that.	हुपा॑र्युमॖ *hupạ̄ryum*^{u}, of over there.
इमिपा॑रि *yimipạ̄r*^{i}, in this direction.	इपा॑र्युमॖ *yipạ̄ryum*^{u}, of this direction.
अमिपा॑रि *amipạ̄r*^{i}, in that (visible) direction.	अपा॑र्युमॖ *apạ̄ryum*^{u}, of that direction.

So also we have,—

ब्रोंठ् *brŏ̄ṭh*, in front.	ब्रूँठ्युमु *brū̃ṭhyum*^{u}, of the front.
पथ् *păth*, behind.	पत्युमु *patyum*^{u}, of the rear.
ह्यूरु *hyūr*^{u}, above.	हीर्युमु *hīryum*^{u}, of above.
प्यठ् *pyăṭh*, above.	प्यठ्युमु *pĕṭhyum*^{u}, of above.
तल् *tal*, below.	तल्युमु *talyum*^{u}, of below.
ब्वन् *bŏn*, below.	ब्वन्युमु *bŏnyum*^{u}, of below.
अ॑न्द्र् *and*^{a}*r*, within.	अ॑न्द्र्युमु *ạnd*^{a}*ryum*^{u}, of within.
न्य॑ब्र् *nyab*^{a}*r*, outside.	न्यब्र्युमु *nyạb*^{a}*ryum*^{u}, of outside.
मञ्ज् *manz*, in.	मञ्ज्युमु *manzyum*^{u}, internal (Cf. Nos. 8 and 22).

45. ख्य॑लु *khyạl*^{u}, fem. ख्य॑ज़ू *khĕj*^{ū}, signifies multitude (iv. 121).

गाव् *gāv*, a cow.	गोव़ूख्य॑लु *gōv*^{ū}*khyạl*^{u}, a herd of cows. *Vide ante*, p. 67.
गुरु *gur*^{u}, a horse.	गुरिख्य॑लु *gur*^{i}*khyạl*^{u}, a troop of horse.
गुपन् *gupan*, cattle.	गुपन्ख्य॑लु *gupankhyạl*^{u}, a herd of cattle.
त्यूरु *tyūr*^{u}, a ram.	तीरिख्य॑लु *tīr*^{i}*khyạl*^{u}, a herd of rams.
ज़नान *zanān*^{a}, a woman.	ज़नानख्य॑लु *zanān*^{a}*khyạl*^{u}, a group of women.
महन्युवु *mahanyuv*^{u}, a man.	महनिविख्य॑लु *mahaniv*^{i}*khyạl*^{u}, a crowd of men.

It will be observed that the termination is added to the Nominative Plural.

46. अय् *ay*, used as follows (iv. 122).

लूख् *lūkh*, people.	लूकय् *lūkay*, a crowd of people.

47. उनु *un*^{u}, fem. ञ् *ñ*, the genitive termination. It is used to form adjectives also (iv. 123). Thus,—

पान *pān*^{a}, self.	पनुन *panun*^{u}, fem. पन॑ञ् *panạñ*, own.

Note that in this word the long vowel of the base is shortened.

48. उद् *ud*ª, fem. ज़ू *z*ª. This is used as follows (iv. 124).

पर् *par*, another.	परुद् *parud*ª, fem. परॅज़ू *parəz*ª, another's.

49. थ *th*ª, used to form **adverbs of manner** (iv. 125), with elision of a preceding ह् *h* (iv. 131). So also in other cases. Thus,—

तिह् *tih*, that.	तिथ *tith*ª, in that manner.
यिह् *yih*, who.	यिथ *yith*ª, how.
क्याह् *kyāh*, what?	क्यथ *kyath*ª, how? (vowel shortened, iv. 129).
इह् *yih*, this.	इथ *yith*ª, thus.
उह् *huh*, thus.	उथ *huth*ª, in that manner.

50. थ् *th*ª, fem. छ् *tsh*ª, forming **adjectives of manner** (iv. 126). Thus,—

तिथ् *tyuth*ª, fem. तिछ् *titsh*ª, of that kind.
यिथ् *yyuth*ª, fem. यिछ् *yitsh*ª, of what kind.
किथ् *kyuth*ª, fem. किछ् *kitsh*ª, of what kind?
इथ् *yuth*ª, fem. इछ् *yitsh*ª, of this kind.
उथ् *huth*ª, fem. उछ् *hutsh*ª, of that kind.

51. पाठि *pāṭh*ⁱ or पाठिन् *pāṭhin*, used pleonastically after adverbs of manner, and similarly after other words (iv. 127, 128, 129). Thus,—

तिथपाठि *tith*ª*pāṭh*ⁱ, in that way.
यिथपाठि *yith*ª*pāṭh*ⁱ, how.
क्यथपाठि *kyath*ª*pāṭh*ⁱ, how?
इथपाठि *yith*ª*pāṭh*ⁱ, thus.
उथपाठि *huth*ª*pāṭh*ⁱ, in that way.

So also तिथपाठिन् *tith*ª*pāṭhin*, &c.

So also we have,—

बिय *biy*ª, other.	बियपाठिन् *biy*ª*pāṭhin*, otherwise.
सोरय् *sōruy*, all.	सारियपाठि *sāriypāṭh*ⁱ, in every way.
हॅल् *həl*ª, crooked.	हॅलिपाठि *həlⁱpāṭh*ⁱ, crookedly.

In the same way the termination can be added to the genitive of any noun.

E.g., तसंन्दि पाठि *tasạnd*^{i} *pāṭh*^{i}, like that.

गुरि संन्दि पाठि *gur*^{i} *sạnd*^{i} *pāṭh*^{i}, like the horse.

So also we have phrases like क्यथताञ्पाठि *kyath*^{a}*-tāñ-pāṭh*^{i}, in any manner. ताञ् *tāñ* = Skr., अपि *api*.

52. रंग *rayg*^{a}, used to form **adverbs of manner** as follows (iv. 130).

तमिरंग *tamirayg*^{a}, in that manner.

यमिरंग *yamirayg*^{a}, how.

कमिरंग *kamirayg*^{a}, how ?

इमिरंग *yimirayg*^{a}, thus.

ऊमिरंग *humiray*^{a}, in that manner.

अमिरंग *amirayg*^{a}, in that manner.

अकिरंग *akirayg*^{a}, in one manner (from अख् *ăkh*, one).

द्वयिरंग *dwayirayg*^{a}, in two ways (from ज़ह् *z*^{a}*h*, two).

त्रयरंग *trĕyarayg*^{a}, in three ways (from त्रिह् *trih*, three).

सारिरंग *sārirayg*^{a}, in every way (from सोर् *sōr*^{a}, all).

यत्सिरंग *yatsirayg*^{a}, in many ways (from यंचू *yạtṣ*^{a}, very).

सिठाहिरंग *siṭhāhirayg*^{a}, in many ways (from सिठाह् *siṭhāh*, very).

53. द् ^{i}, to form **adverbs of place** from pronominal bases (iv. 132). Thus,—

तति *tạt*^{i}, there.

यति *yạt*^{i}, where.

कति *kạt*^{i}, where ?

इति *yit*^{i}, here.

ऊति *hut*^{i}, there.

अति *ạt*^{i}, there.

So also we have (iv. 155), formed from words which are not pronominal bases,—

ब्रोंठ् *brōṭh*, before.

ब्रूठि *brūṭh*^{i}, in front.

पथ् *păth* behind.

पति *pạt*^{i}, in behind.

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खोवुर् *khōwur*^{u}, left. खोव्रि *khōw*^{ə}*r*^{i} (p. 53), on the left.

दछ्युनु *dachyun*^{u}, right. दछिनि *dachin*^{i} (p. 54), on the right.

तल् *tal*, below. तॅलि *tạl*^{i}, below.

प्यठ् *pyăṭh*, above. प्यठि *pyạṭh*^{i}, above.

54. अन *an*, अनी *anī*, अनस् *anas*, अनन् *anan*, added pleonastically to the adverbs of place mentioned in No. 53 (iv. 133, 135). Thus,—

कत्यन् *katyan*, कत्यनी *katyanī*, कत्यनस् *katyanas*, or कत्यनन् *katyanan*, where?

तत्यन् *tatyan*, तत्यनी *tatyanī*, तत्यनस् *tatyanas*, or तत्यनन् *tatyanan*, there.

यत्यन् *yatyan*, यत्यनी *yatyanī*, यत्यनस् *yatyanas*, or यत्यनन् *yatyanan*, where.

अत्यन् *atyan*, अत्यनी *atyanī*, अत्यनस् *atyanas*, or अत्यनन् *atyanan*, there, &c.

55. इ *i*, to form **adverbs of motion from** (iv. 132). Thus,—

तति *tati*, from there, thence.

यति *yati*, from where, whence.

कति *kati*, from where? whence?

इति *yiti*, hence.

हुति *huti*, thence.

अति *ati*, thence.

56. प्यठ *pyaṭh*^{a}, added pleonastically to the adverbs of motion from, mentioned in No. 55 (iv. 134). Thus,—

ततिप्यठ *tatipyaṭh*^{a}, thence.

यतिप्यठ *yatipyaṭh*^{a}, whence.

कतिप्यठ *katipyaṭh*^{a}, whence?

इतिप्यठ *yitipyaṭh*^{a}, hence.

हुतिप्यठ *hutipyaṭh*^{a}, thence.

This is merely the post-position of the ablative. Cf. Hindūstānī कहाँ से *kahā̃ sē*.

57. ओर् *ōr* used to form **adverbs of place** as follows (iv. 136).

तोर् *tōr* there; योर् *yōr*, where; कोर् *kōr*, where? योर् *yōr*, here होर् *hōr*, there; ओर् *ōr*, there.

When the suffix य् *y*, even, is added, ओ *ō* becomes ऊ *ū*. Thus,—

तूर्य् *tūry*, even there; यूर्य् *yūry*, even where; कूर्य् *kūry*, even where? यूर्य् *yūry*, even here; ऊर्य् *ury*, even there.

58. तु *t*ᵘ, or तुथ् *tuth*, used to form **adverbs of place** (iv. 136). Thus,—

तॅतु *tạt*ᵘ or ततुथ् *tatuth*, there; यॅतु *yạt*ᵘ or यतुथ् *yatuth*, where; कॅतु *kạt*ᵘ or कतुथ् *katuth*, where? इतु *yit*ᵘ or इतुथ् *yituth*, here; ऊतु *hut*ᵘ or ऊतुथ् *hututh*, there; ऑतु *ạt*ᵘ, or अतुथ् *atuth*, there.

With emphatic य् *y*, these become, तॅतुय् *tạtuy*, ततुथ्य् *tatuthʰy*, even here; यॅतुय् *yạtuy* or यतुथ्य् *yatuthʰy*, even where, and so on (p. 88).

59. ओर *ōrᵃ*, used to make **adverbs of motion from** (iv. 137). Thus,—

तोर *tōrᵃ*, thence; योर *yōrᵃ*, whence; कोर *kōrᵃ*, whence? यॅार *yŏrᵃ*, hence; होर *hōrᵃ*, thence; ओर *ōrᵃ*, thence.

60. अलि *ali* or ऑलि *ạliˡ*, used to make **adverbs of time** (iv. 138). Thus,—

त्यलि *tĕli*, or त्यॅलि *tẹ̆lˡ*, then; य्यलि *yĕli* or य्यॅलि *yẹ̆lˡ*, when; क्यलि *kĕli* or क्यॅलि *kẹ̆lˡ*, when?

This termination is not used with other pronouns. The word for 'now' is अञ् *wŏñ*. 'Even now' is वुञ् *wuñ* (iv. 139). 'When?' is also कर् *kar* (iv. 140).

61. इ *i*, or ए *ᵉ*, used to form **adverbs of time** (iv. 141, 143). It is really the case of the agent, sometimes masc., and sometimes (to agree with विज़ि *wizi* understood) fem. Thus,—

From—

रातुल् *rātulᵘ*, night time. रात्लि *rātᵒli*, by night.

We also have रात्किउ *rātkyutᵘ*, with the dative post-position (iv. 142).

दॅाहुल् *dŏhulᵘ*, day time. दॅाह्लि *dŏhᵒli*, by day.

न्यहफ़ॅल् *nyahaphŏlᵘ*, break of dawn. न्यहफ़ॅलि *nyahaphŏli*, at daybreak.

सुल् *sulᵘ*, earliness. सुलि *suli*, early.

य॑च़ूकाल् *yạts^{u}kāl*, delay.	य॑च़ूका॑लि *yạts^{u}kạ̄l^{i}*, late.
काल् *kāl*, time.	का॑लि *kạ̄l^{i}*, at the (right) time.

We have also का॑लिक्यथ् *kạ̄l^{i}kyăth*, the day after to-morrow. क्यथ् *kyăth* is the sign of the Locative. Again ततिका॑लिक्यथ् *tatikạ̄l^{i}kyăth*, two days after to-morrow.

विज़ू *wiz^{u}*, time, takes this suffix, which is in this case, clearly the agent singular, in the following phrases.

कमिविज़ि *kamiwizi*, when? तमिविज़ि *tamiwizi*, then; यमिविज़ि *yamiwizi*, when; &c.

62. स् *s*, used to form **adverbs of time** in the following. It is really the accusative singular (iv. 144).

कोज़ु *kōj^{u}*, the forenoon meal.	का॑जिस् *kạ̄jis*, at the time of the forenoon meal.
मिम्युज़ु *mimyuz^{u}*, the afternoon meal.	मिमिज़िस् *mimizis*, at the time of the afternoon meal.

63. अन् *an*, used to form **adverbs of time**, especially with regard to the divisions of the day (iv. 145).

मन्दिञ़ु *mandyuñ^{u}*, midday.	मन्दिञ़न् *mandiñan* at midday.
दुपहर् *dupahar*, midday.	दुपहरन् *dupaharan*, at midday.
कालचन् *kālacan*, evening.	कालचनन् *kālacanan*, at evening.
बतन्यंग् *batanyaŋg*, the time of the night meal.	बतन्यंगन् *batanyaŋgan*, at the time of the night meal.
बतदब् *batadab*, the time of going to bed after the night meal.	बतदबन् *batadaban*, at bed time.
अड्राथ् *aḍrāth*, midnight.	अड्रातन् *aḍrātan*, at midnight.
पत्युमुपहर् *patyum^{u}pahar*, the last watch of the night.	पतिम्पहरन् *patimpaharan*, in the last watch of the night.

We even find this with foreign words, as,—

सुब्ह् *sub^{a}h*, morning.	सुब्हन् *sub^{a}han*, at morn.
शाम् *çām*, evening.	शामन् *çāman*, at eve.

64. अ *a*, used to signify **distribution**, with the prefix प्रथ *prăth* (iv. 146). Thus,—

द्वह् *dŏh*, a day.	प्रथ्द्वह *prăthdŏh^{a}*, day by day.

(Also दह *dŏh*ª, day by day, iv. 147).

पहर् *pahar*, a watch.	प्रथ्पहर *prăthpahar*ª, at each watch.
वरिह्य *warihy*, a year.	प्रथ्वरिह्य *prăthwarihy*ª, yearly.

प्रथ् *prăth*, also simply governs the accusative.

Thus,—

अख् *ăkh*, one.	प्रथ् अकिस् *prăth akis*, one by one.
विज़ू *wiz*ª, time.	प्रथ् विज़ि *prăth wizi*, each time.
मह्निव् *mahanyuv*ª, a man.	प्रथ् मह्निविस् *prăth mahanivis*, man by man.
ज़नान *zanānª*, a woman.	प्रथ् ज़नानि *prăth zanāni*, woman by woman.

When य् *y*, even, is added to the phrase प्रथ्दह *prăthdŏh*ª, the प्रथ् *prăth* is always dropped. Thus, always, दहय् *dŏhay*, even day by day (iv. 148). प्रथ्दहय् *prăthdŏhay*, is not used.

65. पथ् *păth*, is also used to signify **distribution,** as follows (iv. 149).

दहपथ् दह *dŏhapăth dŏh*ª, day by day.

वरिह्यपथ् वरिह्य *warihyapăth warihy*ª, year by year.

ज़निपथ् ज़नि *zanipăth zani*, person by person.

66. उस् *us*, used as follows (iv. 150, 151, 152).

यह् *yih*, this.	यहुस् *yihus*, this year.
ब्रोंठ् *brōṭh*, before.	ब्रोंठुस् *brōṭhus*, next year.
पठ् *păth*, behind.	परुस् *parus*, last year (with change of *t* to *r*).
प्रोद् *prōr*ª, belonging to the year before last.	प्रोर्युस् *prāryus*, in the year before last.

67. किनि *kin*ⁱ, used to form **adverbs of direction from** (iv. 153); added to No. 55. Thus,—

तटिकिनि *tatikin*ⁱ, thence; यटिकिनि *yatikin*ⁱ, whence; कटिकिनि *katikin*ⁱ, whence? यिटिकिनि *yitikin*ⁱ, hence; हुटिकिनि *hutikin*ⁱ, thence.

ब्रोंठ् *brōṭh*, before.	ब्रूठिकिनि *brūṭhⁱkin*ⁱ, from before.
पठ् *păth*, behind.	पठिकिनि *patⁱkin*ⁱ, from behind.

दछ्युनु *dachyun*^{u}, right.	दछि्निकि्नि *dachin*^{i}*kin*^{i}, from the right.
खोवुरु *khōwur*^{u}, left.	खोव्रिकि्नि *khōw*^{a}*r*^{i}*kin*^{i}, from the left.
तल् *tal*, below.	त॑लिकि्नि *tạl*^{i}*kin*^{i}, from below.
प्यठ् *pyăṭh*, above.	प्य॑ठिकि्नि *pẹ̆th*^{i}*kin*^{i}, from above.

68. कनि *kani*, used to form **adverbs of direction from** (iv. 153), with No. 59. तोरकनि *tōrakani*, from there; योरकनि *yōrakani*, from where; कोरकनि *kōrakani*, whence? होरकनि *hōrakani* or ओरकनि *ōrakani*, thence.

So also we have, signifying **cause,**—

तमिकनि *tamikani* or तवकनि *tawakani*, for that reason.

यमिकनि *yamikani* or यवकनि *yawakani*, for what reason.

कमिकनि *kamikani* or कवकनि *kawakani*, for what reason?

इमिकनि *yimikani* or इवकनि *yiwakani*, for this reason.

हुमिकनि *humikani* (not हुवकनि *huwakani*), for that reason.

अमिकनि *amikani* or अवकनि *awakani*, for that reason.

It is also used with words of **time** to signify **uncertainty** (iv. 154). Thus,—

अज़्कनि *azkani*, perhaps to-day; पगाह्कनि *pagāhkani*, perhaps to-morrow; का॑लिक्यथ्कनि *kạ̄l*^{i}*kyăthkani*, (see No. 61), about the day after to-morrow; ज॑त्रकनि *ạ̄trakani*, about the day before yesterday; द॑हुम्कनि *dạhumkani*, about the tenth (lunar) day; हारकनि *hārakani*, about *aṣāḍha*.

69. पत *pat*^{a}, used to form **adverbs of time after** (iv. 153). Thus,—

तमिपत *tamipat*^{a}, after then.

तवपत *tawapat*^{a}, after then, and so on, as in No. 68.

70. पा॑रि *pạ̄r*^{i}, to indicate **direction from** or **in** (iv. 156). Cf. No. 44). Thus,—

कमिपा॑रि *kamipạ̄r*^{i} or कपा॑रि *kapạ̄r*^{i}, in or from what direction?

तमिपा॑रि *tamipạ̄r*^{i}, or तपा॑रि*apạ̄r*^{i}, in or from that direction.

यमिपा़र् *yamipā́r*^{i}, or यपा़र् *yapā́r*^{i}, in or from what direction.

यमिपा़र् *yimipā́r*^{i} or यपा़र् *yipā́r*^{i}, in or from this direction.

ऊमिपा़र् *humipā́r*^{i} or ऊपा़र् *hupā́r*^{i}, in or from that direction.

अमिपा़र् *amipā́r*^{i} or अपा़र् *apā́r*^{i}, in or from that direction.

And so on. So also,—

दछिनिपा़र् *dachin*^{i}*pā́r*^{i}, from or on the right; खोव्रिपा़र् *khōw*^{ə}*r*^{i}-*pā́r*^{i}, from or on the left; ब्रूठिपा़र् *brūṭh*^{i}*pā́r*^{i}, in or from the front; पतिम्िपा़र् *patim*^{i}*pā́r*^{i}, in or from behind.

From च्रोर् *ṯsōr*, four, we have च्पा़र् *ṯsŏpā́r*^{i} or च्वापा़र् *ṯsŏwāpā́r*^{i}, in or from all round, *i.e.*, all four directions.

But च्रोरिपा़र् *ṯsōripā́r*^{i}, in or from four directions only (iv. 157). As usual these nouns take the case of the agent.

71. कुन् *kun*, added to **adverbs of place** to signify **direction** (iv. 158). Thus (No. 57), तोकुन् *tōrkun*, in that direction; योकुन् *yōrkun*, in what direction; कोकुन् *kōrkun*, in what direction? योकुन् *yōrkun*, in this direction; होकुन् *hōrkun*, in that direction; ओकुन् *ōrkun*, in that direction.

तूर्यकुन् *turykun*, even in that direction; यूर्यकुन् *yūrykun*, even in what direction.

Again (No. 58), तत्ुकुन् *ṭaṯ*^{ə}*kun*, in that direction; यत्ुकुन् *yaṯ*^{ə}*kun*, and so on.

In these last the final त् *ṯ*^{ə} of the first element may be changed to थ् *th*. Thus,—

तथ्कुन् *tathkun*, in that direction; यथ्कुन् *yathkun*, in what direction; कथ्कुन् *kathkun*, in what direction? यथ्कुन् *yithkun*, in this direction; हथ्कुन् *huthkun*, in that direction; अथ्कुन् *athkun*, in that direction. With emphatic य् *y* we get, तथ्यकुन् *tathykun*, even in that direction; यथ्यकुन् *yathykun*, even in what direction, and so on.

Similarly we have,—

गाम् *gām*, a village.	गाम्कुन् *gāmkun*, in the direction of the village.
गर *gar*^{ə}, a house.	गरकुन् *garakun*, in the direction of the house.

क्वल् *kŏl*, (fem.), a river.	क्वलिकुन् *kŏlikun*, towards the river.
वा॑रु् *wạ̄r*^{u}, a garden.	वारिकुन् *wārikun*, towards the garden.
ह्य॑रु् *hyạr*^{u}, ह्युरु् *hyur*^{u}, or ह्यूरु् *hyūr*^{u}, above.	ह्य॑रुकुन् *hyạr*^{u}*kun*, ह्युरुकुन् *hyur*^{u}*kun*, or ह्यूरुकुन् *hyūr*^{u}*kun*, towards above.
ब्वन् *bŏn*, below.	ब्वन्कुन् *bŏnkun*, towards below.

The suffix can also be used as a post-position added to the accusative. Thus,—

मोलु *mōl*^{u}, a father.	मा॑लिस् कुन् *mạ̄lis kun*, towards the father.
मा॑जू *mạ̄j*^{u}, a mother.	माज्य कुन् *mājĕ kun*, towards the mother.

So तमिस् कुन् *tamis kun*, towards him; यमिस् कुन् *yamis kun*, towards whom.

72. उवु *uv*^{u}, (fem. अ॑वू *ạv*^{u}), signifies **composed** of (iv. 159). Thus,—

स्वन् *sŏn*, gold.	स्वनुवु *sŏnuv*^{u}, fem. स्वन॑वू *sonạv*^{u}, made of gold.
म्य॑चू *mĕts*^{u}, earth.	म्यच्युवु *mĕtsyuv*^{u}, fem. म्यच्य॑वू *mĕtsyạv*^{u} made of earth.
काठ् *kāṭh*, wood.	काठुवु *kāṭhuv*^{u}, made of wood.

In all the above, the suffix is added to the form of the agent, but a final *a* is elided.

73. बुज्य् *buzy*, fem. the same, signifies **dependent on** (iv. 160). Thus,—

लूख् *lūkh*, people.	लूकबुज्य् *lūkabuzy*, dependent on people; belonging to other people.
खड् *khŏḍ*, a hollow.	खडबुज्य् *khŏḍabuzy*, dependent on a hollow; *i.e.*, buried in the ground.
क्वलय् *kŏlay*, a wife.	क्वलयबुज्य् *kŏlayabuzy*, dependent on a wife; having only one relation,—his wife.

74. ल्यक् *lyąkᵘ*, fem. ल्यच् *lĕcᵉ*, used with अद् *aḍ*, half, as follows (iv. 161).

अडल्यक् *aḍalyąkᵘ*, incomplete: *e.g.*

अडल्यच् कोम् *aḍlĕcᵉ kōm*, an incomplete action.

अडल्यच् लर् *aḍalĕcᵉ laṛᵉ*, an incomplete house.

75. रिंग् *riyg*, used as follows (iv. 162) to make **diminutives**.

अब्र् *ąbᵒr*, a cloud.	अब्ररिंग् *ąbᵒrariyg*, a slight cloud.
दूह् *dᵒh*, smoke.	दूहरिंग् *dᵒhariyg*, a slight cloud of smoke.
वाव् *wāw*, wind.	वावरिंग् *wāwariyg*, a little wind.

76. ल्थ् *lᵒth*, (fem.), used to form **diminutives** of words signifying breath or light (iv. 163). Thus,—

प्राण् *prāṇ*, life.	प्राणल्थ् *prāṇalᵒth*, a spark of life.
शाह् *çāh*, breath.	शाहल्थ् *çāhalᵒth*, a trace of breath.
गाश् *gāç*, light.	गाशल्थ् *gāçalᵒth*, a very little light.
च्रोंग् *ʦōgᵘ*, a lamp.	च्रोंगिल्थ् *ʦōgⁱlᵒth*, a little lamp.

The final थ् *th* becomes त् *t* in declension. Thus, acc. sg. प्राणल्ति *prāṇalᵒti* (not प्राणल्चु *prāṇalᵒʦᵘ*).

77. त्र् *tᵒr* (fem.), used to form **diminutives** of words meaning cloths (iv. 164).

कपुर् *kapur*, cotton cloth.	कपर्त्र् *kapartᵒr*, a piece of cloth.
पट्टु *paṭᵘ*, woollen cloth.	पट्टित्र् *paṭⁱtᵒr*.

78. छल् *chal* (fem.), used to form **diminutives**, especially of clothes (iv. 165).

कपुर् *kapur*, cotton cloth.	कपरछल् *kaparchal*, a piece of cotton cloth.
च्वट् *ʦŏṭᵉ*, a cake.	च्वचछल् *ʦŏcĕchal*, a piece of cake.
बुर्ज *burjᵃ*, a *bhurja* leaf.	बुर्जछल् *burjachal*, a piece of *bhurja* leaf.
पट्ट *paṭᵉ*, a tablet.	पचछल् *pacĕchal*, a piece of board.
ह्रुदमाज़् *ḥṛhnamāz*, the liver.	ह्रुदमाज़छल् *ḥṛhnamāz chal*, a piece of liver.

79. तिलिम् *tilim*, also forms similar **diminutives** (iv. 165).

Thus कपर्तिलिम् *kapartilim*; च़्यतिलिम् *tsŏcĕtilim*; बुर्जतिलिम् *burjatilim*, &c.

It is smaller than a thing formed with No. 78.

80. रेम्फ् *rēmph* (fem.) (*vide ante*, p. 62), used to form **diminutives**, and **in pity** (iv. 166). Thus,—

शुरु् *çur*^{u}, a boy.	शुरिरेम्फ् *çur*^{i}*rēmph*, a poor little boy.
गुरु् *gur*^{u}, a horse.	गुरिरेम्फ् *gur*^{i}*rēmph*, a poor little horse.
महनिवु *mahanyuv*^{u}, a man.	महनिविरेम्फ् *mahaniv*^{i}*rēmph*, a poor man.
च़ूँठु *tsũṭh*^{u}, an apple.	च़ूँठिरेम्फ् *tsũṭh*^{i}*rēmph*, a little apple.

81. रेँछ् *rẽtsh* (fem.), indicates **connexion**, including the idea of **partition** (iv. 167). Thus,—

कपुर् *kapur*, cotton cloth; कपर्रेँछ् *kaparrẽtsh*, a piece of cloth.

मातामाल्रेँछ् छ्यह् *mātāmālrẽtsh chĕh*, there is some slight relationship with his maternal grandfather.

82. ज़ंड् *zaṇḍ* (masc.), added to words signifying vegetables or wood, to signify **a little** (iv. 168). Thus,—

हाख् *hākh*, spinach.	हाकज़ंड् *hākazaṇḍ*, a little spinach.
काठ् *kāṭh*, wood.	काठज़ंड् *kāṭhazaṇḍ*, a little wood.
पोष् *pōṣ*, a flower.	पोषज़ंड् *pōṣazaṇḍ*, a few flowers.
ज़्युनु *zyun*^{u}, firewood.	ज़िनिज़ंड् *zin*^{i}*zaṇḍ*, a little firewood.
स्युनु *syun*^{u}, vegetables, meat, &c., (eaten with rice).	सिनिज़ंड् *sin*^{i}*zaṇḍ*, a few vegetables (not meat. If meat is included in the idea, *zaṇḍ* cannot be used).
मुजि *muj*^{i}, a radish (Cf. No. 32 *ante*).	मुज्यज़ंड् *mujĕzaṇḍ*, a few radishes.

83. काञ् *kā̤ñ* (fem.), used in the same way as No. 82 (iv. 168). Thus,—

हाककाञ् *hākakā̤ñ*, a little spinach; काठकाञ् *kāṭhakā̤ñ*, a little wood; पोषकाञ् *pōṣakā̤ñ*, a few flowers; so ज़िनिकाञ् *zin*^{i}*kā̤ñ*; सिनिकाञ् *sin*^{i}*kā̤ñ*; मुज्यकाञ् *mujĕkā̤ñ*.

84. तुल् *tul*ᵘ (masc.), also used in the same way as No. 82 (iv. 168). Thus;—हाकतुल् *hākatul*ᵘ, a little spinach; काठतुल् *kāṭhatul*ᵘ, a little wood: पोषतुल् *pōṣatul*ᵘ, a few flowers. So ज़िनितुल् *zinⁱtul*ᵘ; सिनितुल् *sinⁱtul*ᵘ; मुज्यतुल् *mujětul*ᵘ.

We may also add वा *ā* (iv. 170). Thus हाकतुल्वा *hākatulwā*, a little spinach.

85. थोप् *thōp*ᵘ (masc.), also used in the same way as No. 82 (iv. 168). Thus,—

हाकथोप् *hākathōp*ᵘ; काठथोप् *kāṭhathōp*ᵘ; पोषथोप् *pōṣathōp*ᵘ; ज़िनिथोप् *zinⁱthōp*ᵘ; सिनिथोप् *sinⁱthōp*ᵘ; मुज्यथोप् *mujěthōp*ᵘ.

86. फल् *phaḷ*ᵘ, used to signify **a little** more especially of any kind of grain (iv. 169). Thus,—

दाज़ *dāñě*, paddy.	दाँफल् *dāphaḷ*ᵘ, a little paddy. *Vide ante*, p. 70.
तमुल् *tŏmul*, rice.	तम्लफल् *tŏmᵃlaphaḷ*ᵘ, a little rice.
कर *karᵃ*, peas.	करफल् *karaphaḷ*ᵘ, a few peas.
मंग् *mŏŋg*, *mung*.	मंगफल् *mŏŋgaphaḷ*ᵘ, a little *mung*.

So also,—

च्ज़् *ʦᵃñ*, charcoal.	च्ज़फल् *ʦᵃñĕphaḷ*ᵘ, a little charcoal.
बठ् *baṭh*ᵘ, cowdung fuel.	बठिफल् *baṭhⁱphaḷ*ᵘ, a little cowdung fuel.
म्यच् *mĕʦᵃ*, earth.	म्यचफल् *mĕʦĕphaḷ*ᵘ, a little earth.

फल् *phaḷ*ᵘ, in the plural, means 'grains,' and is not used as a diminutive. Thus,—

दाँफलि *dāphaḷⁱ*, grains of paddy; तम्लफलि *tŏmᵃlaphaḷⁱ*, grains of rice, &c.

वा *ā* may be added to फल् *phaḷ*ᵘ. Thus (iv. 170) बतफल्वा *bataphaḷwā*, a little boiled rice.

87. म्वय् *mŏy* or म्वया *mŏyā*, may be used to form **diminutives** with any of the words mentioned in Nos. 75 to 86, except kinds of wood and grain (Nos. 82 and 86) (iv. 170). Thus;—

अब्रम्वय् *ạbᵃramŏy* or अब्रम्वया *ạbᵃramŏyā*, a small cloud; दुहम्वया *dᵃhamŏyā*, slight smoke; वावम्वया *wāwamŏyā*, slight wind; हाकम्वया

hākamŏyā, a little spinach (only used of cooked spinach. हाकतुला *hākatulā* (cf. 84) means both cooked and uncooked); पोषम्वया *pōṣamŏyā*, a few flowers; च़्ञम्वया *ts*ᵃ*ñēmŏyā*, a little charcoal; म्यच़्म्वया *mĕtsĕmŏyā*, a little earth; बतम्वया *batamŏyā*, a little boiled grain.

88. हन् *han* or हना *hanā*, used exactly like No. 87 (iv. 170). Thus,—

अ॑ब्रहन् *ạb*ᵃ*rahan* or अ॑ब्रहना *ạb*ᵃ*rahanā*, and so on.

89. बल् *bal*, is added to any word to indicate the presence of water, or a place for offering sacrifices to minor deities or spirits (iv. 171, 172, 173). Thus we have.

व्यथबल् *vyathabal*, wherever the water of the Jhelam flows. *E.g.*, (to a man going to bathe) च़्ह् क॑तु गङ्ख्? व्यथबल् *ts*ᵃ*h kạt*ᵘ *gatshakh*? *vyathabal*. Where are you going? (Answer) to *vyathabal*, *i.e.*, to bathe in the Jhelam.

So गंगबल् *gaŋgabal*, name of a well-known bathing place. मा॑रूबल् *mạ̄r*ᵘ*bal*, *vide ante*, p. 67, the water of the river Mār. प्वखरिबल् *pŏkharibal*, a tank (with water in it), name of a well-known tank. क्रीरिबल् *krīr*ⁱ*bal*, a well; आवरिञ़बल् *āwariñĕbal*, a place where a funeral pyre is set up (always on the bank of a river); शिम्शानबल् *çimçānabal*, a burning ghat, (always on the bank of a river).

सबबल् *sababal*, a place where a wedding dinner party is carried on वुरबल् *wurabal*, the place where the cooking fires (*wur*) for a bridegroom's party are used; कोंदबल् *kŏ̃dabal*, a brick or potter's kiln; राज़बल् *rāzabal*, a burning *ghāṭ* (*rāz* is the superintendent of a burning ghāṭ. Hence, here used for a ghāṭ). ग्रटबल् *graṭabal*, the site of a Persian wheel. यारबल् *yārabal*, the place where water (Skr. वारि *vāri*,) is offered to ancestors; *i.e.*, according to Kāçmīrī custom, a bathing place.

An Account of Travels on the Shores of Lake Yamdo-Croft.—*By* Sarat Chandra Das, C.I.E., Rai Bahadur.

[Read February, 1897.]

I.—INTRODUCTION.

1. Early accounts of Lake Palti.

In 1730, Orazio Della Penna, a Capuchin missionary, visited this great lake of Tibet and described it as follows :—

"The easternmost place is called Kambala, which is the name of a great mountain, on the slopes of which are many places, and in the plain at the foot to the south is a great lake called Iandro, which is eighteen days' journey round, according to those who have made the circuit, but within are some hilly islands. The same lake has no outlet that I know of, and during a day and a half's march round it, I can vouch that I saw none; while as regards the remaining portion, I have the authority of those who have made its circuit."

This was the famous ring-like lake of Palti, which has appeared in all maps since the days of D'Anville. The peculiar lake of Palti, Piate, or Yam-dok-chu, with its great central island, like a large ring, first appeared on the map prepared by D'Anville, from the survey of the Lamas, under Jesuit instruction, which was published by Du-Halde in 1735. It has been repeated on all subsequent general maps. Giorgi, in his 'Alphabetum Tibetanum' (1762) says, that Palte lake, otherwise called Jang-so or Yam-dso, according to native report is of very great size, so that a man could not journey round it under eighteen days. It is three days' journey from Lhasa. From the middle of the lake rises a continuous chain of hills and islands. On the southern side is a monastery, the abode of a great queen, who is born a second time, called Torcepano. She is honoured as a real goddess by the Indians and Nepalese, who worship her under the name of Bovani. The Tibetans believe a certain holy spirit is reborn in its divine essence in this hideous female, just as in the Grand Lama. Whenever she issues

from her house, or from the island, or journeys into the city of Lhasa, a procession precedes her. Mr. Bogle, it will be remembered, made the acquaintance of this female divinity; and Dr. Hamilton cured her of an illness, and visited her constantly:—

"The holidays at the new year drew nigh, and the Lama's relations came from parts of the country to pay their respects to him. His cousin the Teshu-tzay Debo (Tashi-tse Deba), with his wife and family, his nieces, the two *annis* whom I saw at Teshu-tzay, their mother Chum Kusho; their true brothers, Pyn Kushos; and a half-sister Durjay Paumo (Dorje Phamo), a female Lama, who is abbess of monastery near the Piate Lake, and is animated by the spirit of a holy lady who died many hundred years ago. * * * * * *

"They stayed about two months at Teshu Lumbo, during which time Mr. Hamilton cured Durjay Paumo and Chum Kusho of complaints which they had long been subject to. * * * * * *

"The mother went with me into the apartment of Durjay Paumo, who was attired in a *Gylong's* dress, her arms bare from the shoulders and sitting cross-legged upon a low cushion. She is also the daughter of the Lama's brother, but by a different wife. She is about seven-and-twenty, with small Chinese features, delicate, though not regular, fine eyes and teeth; her complexion fair, but wan and sickly; and an expression of langour and melancholy in her countenance, which I believe, is occasioned by the joyless life that she leads. She wears her hair, a privilege granted to no other vestal I have seen; it is combed back without any ornaments, and falls in tresses upon her shoulders. Her *chanea*, like the Lama's, is supposed to convey a blessing, and I did not fail to receive it. After making presents and obeisances, I kneeled down, and stretching out her arm, which is equal to "the finest lady in the land," she laid her hand upon my head."[1]

Mr. Manning is the only Englishman who ever saw Lake Palti, and it appears from his narrative that he was not aware that the hills on the opposite shore formed an island. In his diary he wrote:—

"Pursuing our course, and gradually descending, the valley at length opened into a large stony plain, at the end of which stood a considerable town on the margin of an extensive lake, or little sea, as it is called. From the opposite or further margin of the lake rose diminutive mountains in a continued chain, which bounded the whole prospect in front."

On the 1st of January 1866, the Pandit, trained and sent on his travels by Colonel Montgomerie arrived at the banks of the Palti or Yamdok-chu lake at a small post called Piahte-jong.

[1] *Markham's Mission of George Bogle*, pp. 244 & 245.

He describes the breadth of the lake as varying from two to three miles, and says that it is reported to be very deep. In the centre of the lake there is a hill at the foot of which, are situated a number of villages. The circumference of the lake is about 45 miles; it is crossed in wicker boats covered with leather.

The Pandit rode along the banks from Piahte-jong to the village of Demalung, from which point the lake stretches to the south-east about 20 miles, and then turns west.

This is the Pandit's account of the lake, extracted from his diary. He further reported to Colonel Montgomerie, that he was informed that the lake encircled a large island, which rises into low, rounded hills, 2,000 or 3,000 feet high, and covered with grass to the top. Between the hills and the margin of the lake, several villages and a white monastery, were visible on the island. The Pandit was told that the lake had no outlet, but he says, its waters were perfectly fresh. Mr. Manning on the contrary says, in the text, that the water of the lake is very bad. The Pandit's observations make the lake 13,500 feet above the sea; and the island rises to 16,000 feet above the sea.

2. A Short Account of Tibet.

Tibet, to speak in the language of Captain Samuel Turner, strikes a traveller, at first sight, as one of the least favoured countries under heaven, and appears to be in a great measure incapable of culture. It exhibits only low rocky mountains, without any visible vegetation, or extensive arid plains, both of the most stern and stubborn aspect. Its climate is cold and bleak in the extreme, from the severe effects of which, the inhabitants are obliged to seek refuge in the sheltered valleys, and hollows, or amidst the warmest aspects of the rocks. Yet perhaps providence, in its impartial distribution of blessings, has bestowed on each country a tolerably equal share. The advantages that one possesses in fertility, and in richness of its forests and its fruits, are amply counterbalanced in the other by its multitudinous flocks and invaluable mines. As one seems to possess the pabulum of vegetable, in the other we find a superabundance of animal life. The variety and quantity of wild-fowl, game, and beasts of prey, flocks, droves and herds, in Tibet are astonishing.

Climate.

The climate of the country north of the Himalayas within the distance of 60 miles, in a direct line from the Kangchanjunga, is extremely cold. The summits of the mountains within this zone remain covered with snow

all through the year.[1] Owing to the high altitude and the rudeness of the winds which prevail there, the ground composed as it is of sand, gravel and loose stones, remains hard as if baked in winter. The climate and soil being alike inhospitable, in this part of the country, there is little habitation of men. The country is occupied by herdsmen and shepherds and also by *Kyang* (wild ass), wild sheep, antelopes, rabbits, wolves and other smaller wild animals. There are snow leopards but no tigers or snakes in Tibet. In the southern parts of Tibet are built cities and castles, and groves of poplar, willows, and stunted trees have been planted. The mountains are destitute of everything except grass and dwarf shrubs.

Products.

Sowing takes place in the beginning of May; the Tibetans gather little wheat, much barley which is their staple food, and some peas which they bruise and give to their horses and cattle. The latter crop is gathered in September. These harvests as well as that of rape from the seeds of which oil is extracted, yield sixty fold, and in good season eighty fold. The people grow carrot, turnips, radishes, garlic and onions. In the south and south-eastern parts are found, walnut, peach, apricots, wild apples and wild vines which yield a few grapes. There are some few flowers. The poplar, elm, willow and ash abound in most of the parks and groves of Tibet.

Mines and minerals.

There are many gold mines in the provinces of U-Tsang, Chang, Takpo, Koñ-bo and Kham. Silver abounds in the last province which borders on China. There are also mines of copper and nickel. Sulphur, vitriol, cinnabar, cobalt, turquoise, stones, amber and alabaster are abundant. The hills of Tibet have, from their general appearance strong mark of containing those fossils, that are inimical to vegetation. Tibet is very poor in iron. It is not that there are no mines of that useful metal in Tibet. It is probable that the Tibetans either do not know to work those mines or that they have no fuel, enough to fuse the metal. In the neighbourhood

[1] During my residence at Tashi-lhunpo, I took observations from the thermometer. I had a Fahrenheit thermometer and a pair of maximum and minimum thermometers. The thermometer during the month of October, was on an average 37° in the morning; at noon 45° and in the evening 40°. During the month of November there was frost in the morning and evening, and the thermometer stood below 30° in the morning and 36° at noon in the shade. A serene, clear sky prevailed, during day and night not a cloud was to be seen in it. The genial warmth of the sun in the transparent atmosphere made the days very delightful. The weather in the months of October and November was clear throughout, cool, and pleasant and the prevailing wind blew from the south and south-west.

of Tashi-lhunpo there is a lead mine. In the province of Chang-thang, about twenty days' march north and north-west of Tashi-lhunpo, there are immense mines of rock-salt which is universally used for all domestic purposes in Tibet, Nepal and Bhutan.

Diseases.

People in Tibet generally suffer from sore eyes, and blindness. The high winds which prevail nine months in the year, sandy soil, and glare from the reflection of the sun, both from the snow and sand, are evidently causes of the same. Coughs, colds, and rheumatism are frequent in Tibet. Simple fevers occasionally arise from temporary causes. They are easily removed, sometimes without treatment.

Liver diseases with the exception of *Pekan*, which is produced by sedentary habit and continual drinking of tea-soup made with rancid butter, are occasionally met with. Tibet is not exempt from venereal diseases. People suffer from it apart from other causes, more on account of the grossness of their food and for want of cleanliness in their habits of living. Smallpox, when it appears in Tibet strikes the people with too much terror and consternation. They pay less attention to those who are infected, thinking their case hopeless. All communication with the infected is strictly forbidden, even at the risk of their being starved, and the house or village is afterwards erased.

During the time I was laid up at the monastery of Samding I observed that the physicians there used roots and bark of roots for making powders and decoction for administering to their patients. The bark, leaves, berries, and stalks of many shrubs and trees are used in a pulverised state or in decoction. Some are astringent, some are of bitter taste, but the generality is employed to strengthen digestion and to work as tonics.

Food.

The Tibetans drink tea prepared in the manner of soup with butter and salt and leave a little in the cup, with which they make a dough with barley meal, and afterwards eat it. For dinner and supper they make the barley meal paste with tea and eat it with boiled mutton, kid or beef of yak when available. They are fond of a gruel made of dried meat, barley meal, radish, or dried curd. The Lamas seldom eat fish or fowl. All classes of people eat raw meat, though occasionally. Only the rich eat rice, bread and meat with sauce, as dainty dishes, called *Gya-zē* prepared after Chinese fashion. They drink malt beer: ardent spirit is seldom taken. The people generally use dried dung of cows, donkeys, horse and sheep, for fuel. Firewood is used when it is available in some districts. They cook in earthen-ware vessels. The Tibetans are skilful potters.

Clothing.

For clothing purposes they have only cloth of wool, serge, or yarn, blankets, which are seldom more than a foot in breadth, and skins with the hair on. In winter they use robes lined with lambskin. Silk robes lined with fur are used by the rich nobles and official Lamas.

House.

They live in walled houses made of stone and sun-dried bricks, built with flat or terrace roof. Their houses are spacious and several storeys high. The grand Lama's residence at Lhasa is thirteen storeys and covers the entire summit of a hill. The temples are generally furnished with gilt turrets and domes made after the Chinese style. The houses are generally whitewashed with a kind of lime, their inside is often neatly plastered and contains paintings. The roof rests on wooden beams and is generally made of slate or clay beaten on branches of trees placed on the beams. The floor of their houses are generally kept clean.

Character and Social Customs.

Mr. George Bogle and Captain Samuel Turner whom Warren Hastings sent to the court of the Tashi Lama, brought back with them a very good opinion regarding the character of the Tibetans. Visiting Tibet full one century after Turner's time, I returned with the same kind of impression of the character of the people. Humanity, and an unartificial gentleness of disposition, are the constant inheritance of a Tibetan. Without being officious, they are obliging; the higher ranks are unassuming, the inferior, respectful in their behaviour; nor are they at all deficient in attention to the female sex; in this respect their conduct is equally remote from rudeness and adulation. The women of Tibet in higher life enjoy an elevated station in society. To the privilege of liberty, the wife adds the character of mistress of the family, and companion of her husbands. Among the humbler classes the company of all, indeed, she is not at all times entitled to expect, different pursuits, either agricultural employments, or mercantile speculations, may occasionally cause the temporary absence of each; yet whatever be the result, the profit of the labourer is expected to flow into the common store; and when one of the husbands returns, whatever may have been his fortune, he is secure of a grateful welcome to a social home. The custom of polyandry which prevails here links whole families together in the matrimonial yoke, checking the increase of population in this singularly unfertile country. It also tends to prevent domestic discords, arising from a division of family interests, and to concentrate all the spirit, and all the virtues, inherent in illustrious blood. Jealousy causes unhappiness and dissensions where several men, not brothers, live in the company of one wife. The several husbands are then called *ñamdo-pyūn*, *i.e.*, brothers on account of a joint wife.

In higher life courtship is carried on with little art, and quickly brought to a conclusion. The elder brother of a family, to whom the choice belongs, when enamoured of a damsel, makes his proposal to the parents. If his suit is approved, and the offer accepted, the parents, with their daughter, repair to the suitor's house, when the male and female acquaintances of both parties meet and carouse for the space of three days, with music, dancing, and every kind of festivity. At the expiration of this time, marriage is complete. Mutual consent is generally the bond of union, and the parties present are witnesses to the contract which is formed for life. In case when one man marries one wife mutual consent is supplemented by a pecuniary contract which makes it dissoluble.

The Aspect of the lake country of Yamdo.

The country round the lake does not exhibit a varied prospect; it is all a leafless, dreary scene; one uniform russet brown covers alike the valleys and the hills. On the summits of the hills, here and there, springs are seen arrested in their fall, and converted into solid monuments of ice. These contribute greatly, together with the universal nakedness of both hills and valleys, to impress the traveller with an idea of the extreme bleakness of the region, and the rigour of its climate. The atmosphere, indeed, is in an extreme degree keen and pure. The dryness of the soil and scantiness of vegetation, contribute little towards charging the air with humidity. It remains clear even to brilliancy throughout the year. In winter the water of the lake becomes frozen. Its expanse becomes uniformly smooth, presenting a most noble sheet of ice.

In the narrowest parts of the lake there are ferries. During summer and autumn small boats made of an entire skin of a yak ply across them, carrying one or two sheep, goats or persons. In winter on the frozen surface, dust and powdered cow-dung are thrown to make the passage of sheep and goat over them less slippery.

The smaller lakes freeze to a great depth which afford ground for skating, but the people of Tibet are ignorant of that kind of amusement; they, however, are very good sliders.

II.—ACCOUNT OF TRAVELS.

1. A visit to Samding, the Great Monastery of the Lake country of Yamdo.

On the 15th of May, 1882, while I was proceeding to Lhasa, in the company of Lhacham Kusho, the wife of *Shápé* Phala, one of the four Ministers of the Grand Lama, of Lhasa, I suddenly fell ill at Nangar-tse.

The kind-hearted lady gave me an introduction to her cousin Dorje Pha-mo, the incarnate female hierach of Samding. In handing over the letter to me she said :—"Fear not Pandubla, Dorje Pha-mo will be as kind to you as myself. We have no hand in the inevitable consequence of *Karma*. You must submit to it, but I am glad that you have fallen ill here instead of at another place, for here we can send you to Dorje Pha-mo. Come directly to our house when you recover." She warned my two attendants Pador and Lama Tomola surnamed Tshingta not to desert me. Her two sons exhorted Pador to be a faithful and devoted servant to Pandubla (myself), and serve him to the last. It was about 9 A.M., when I slowly rode towards Samding. At a distance of about two miles from Nangar-tse, we crossed a sluggish stream which flowed towards the Yamdo lake. The rivulet was teeming with a small fish and overgrown with a kind of sedge, over which green moss was scattered. The plain over which we travelled was extensive towards the north and south.

Crossing three or four limpid, but sluggish streams, all on their way to join the great lake, we arrived at the eastern side of Samding monastery, which, perched on the top of a barren hill, looked very picturesque. The flight of stone steps from the foot of the hill to the top of it, along which a zig-zag pathway wound up, lined by a stone wall about six feet high and three feet broad, filled me with the greatest dismay: how could I ascend to that height when my heart throbbed even while I was seated on the pony! Arrived at the large *Chhorten* (stūpa) where pilgrims generally halt and encamp, Tomola asked two men, who were coming down from the monastery, if Dorje Pha-mo was accessible to pilgrims, and if the two physicians were at the monastery. Being answered in the affirmative, I dismounted from the pony, and sat down gasping on a stone step. After a few minntes' rest we commenced our wearisome ascent. Taking rest at every bend of the stair, I reached its top about 300 feet in height. The top of the steps, however, was not the end, for a narrow pathway thence lead us further up to the foot of the monastery. From the eastern edge of the hill we now came to the north-western face of it, whence we enjoyed a grand view of the inner lake of Yamdo. Ascending a few steps, we arrived at the northern gate of the monastery, which faces the inner and higher lake called Dumo-tsho, the demon's lake. I saw with surprise several men walking round the monastery and continually twirling *Manikhorlo* (prayer wheels), for I thought men, excepting women pilgrims, had no access to the monastery of which the presiding head was an incarnate nun; but the number of monks seemed to be large among the circumambulators. I was led along a narrow lane towards the north-east corner of the monastery. A few minutes after I was waiting

seated on the plinth of the building. Amchi Chhenpo the senior physician arrived, and with an appearance of kindness and sympathy, while feeling my pulse said "*mi-tog, mi-tog* do not apprehend (danger), do not apprehend; you have come from a great distance, I will give you good medicine." He appeared to be about 70 years in age, quite grey, but with a frame still strong and sturdy, of middle stature, with agreeable features, broad forehead and dignified looks. Helped by Tomola, I followed him, and after ascending two ladders we arrived at the portico of his residence. The old man, while twirling his prayer wheel with the right hand, and frequently taking snuff with his left, observed the working of my lungs with attention as I walked and climbed up. He gave me two powders to be taken with warm water and ordered his cook to serve me with a cup of plain tea. Shortly after being refreshed we went to the place of the venerable lady Dorje Pha-mo, carrying Lhacham's letter. Tomola represented my case to her through the Amchi Chhenpo, and paid five *tankas* with a scarf for her blessings and protection. Dorje Pha-mo was at this time performing some religious service. She received the letter and immediately consulted certain books on divination to examine my fortune. She then informed Tomola that she had found my illness to be serious though not fatal, in consequence of which, the speedy observance of some efficacious religious service would be urgently needed. As I had come from Tashi-lhunpo, and with a letter from Lhacham, she would be glad to see me later on. She also conveyed to me her leave to freely ask for anything we might require for subsistence during our stay at Samding. This assurance was most cheering, and enlivened my drooping spirits. Tomola went to the evening congregation of the monks leaving me in the old physician's charge. He presented the assembly with enough of tea and butter, and also a few pieces of silver, together with a scarf, requesting them to pray for my recovery. The monks with one voice prayed that the gods might extend their mercy to me, a pilgrim from a distant land. Next day Tomola arranged to entertain the monks of the monastery who were about eighty, with food.

The monastery of Samding was built on the narrow neck of land which connects the peninsula of Donang with the main land of Tibet. It has the holy lake of Yamdo on its west and the accursed Dumo, the demon's lake, on its east. Dorje Pha-mo is venerated for her power to suppress the demons which, it is believed, infest the latter.

The peninsula of Donang and the smaller islands of the great lake are frequented by great abundance of water-fowl, wild geese, ducks, and storks called *Tung-tung*, which, on the approach of winter take their flight to the milder regions in the Himalayas.

Large numbers of swans, the largest species of the crane kind, come here in summer and autumn and lay eggs, some of which are as large as a turkey's egg, in the sands and in the crevices of rocks near the banks. During the rainy season sounds resembling those of a falling avalanche, or what are called "Barisal guns," are heard from Samding and the neighbouring places to come out of the smaller lake in consequence of which it is called Dumo-tsho—the lake of the demon.

2. Journey on the shores of Lake Yamdo-Croft (Palti).

On the 23rd of October (1882) on my way to the ancient monastery of Sam-yea, I revisited the place called Dsara tsan-chhur (the nook of the genii), so called on account of its being a hiding place of robbers who waylay travellers. Passing it with feelings of dread and danger, we entered into the tortuous winding of a rugged and gloomy valley, which passed, we began to see light as the glen widened. We then got a peep into the table-land of Nangar-tse and descried the famous monastery of Samding, the late scene of my sufferings. Its white walls and sombre roofs could be distinctly seen At about 10 A.M., we arrived at the solitary village of Rhingla. Formerly when Rhingla was prosperous, a branch monastery of Samding existed here. It is now in ruins with the exception of a *chhorten*. There are two or three families here who make pottery. We cooked our breakfast in the house of an old potter of 70 whose two sons were engaged in turning pots. They employed a concave wooden pan, on which pots were turned by being twirled with the hand. During the rotation of the pan with the pot the potter shaped the latter with a wooden knife, and sometimes with his fingers. After breakfast we resumed our journey. Crossing the Dsara chhur which rising from Kharula empties itself in the Yamdo lake we ascended along the gentle slopes of a hill to take the road to Talung.

The contrast between the elevated and the lower platform of this lake country is most striking. The latter, which extended up to the margin of the lake, being covered with an extensive carpet of deep verdure, afforded refreshment to the eye, while the former, the abodes only of vultures and kites, was of a most repulsive and inhospitable aspect. The inlets of the Yamdo lake from this side were also numerous. We passed by a walled enclosure, adjoining which there were some ruins. We were told that this enclosure was solely used as a pony market, and that the annual pony fair of Talung formerly used to be held here. There were many *dōk* sheds, now deserted, probably owing to the shepherds and herdsmen having retired to more fertile parts of the country. We now found ourselves in a gravelly plain

filled with scattered blocks of rock and boulders. The way, which threaded sometimes along the edge of the mountains and sometimes through the middle of the plain, was very rough. I therefore rode very carefully. The village of Talung (country of ponies), which has a hillock in its middle, from a distance presented a very imposing appearance. We arrived at this at 5 P.M. A castle-like monastery with painted windows and corner towers adorns its top. The village is large, containing upwards of two hundred houses, scattered over the flat. At the foot of the central hill there is another monastery belonging to Sakya. The barley-fields were all stony and evidently sterile. Far behind were the *dōk-pa* sheds. The yaks of the place appeared to be of good breed and large size. The people, from the way they had cultivated the lands, seemed very industrious. This year's crop had been much damaged by the frost and hailstorm of September. The villagers refused us shelter in their houses, suspecting Phurchung to be a *Duk-pa* (Bhutanese). The Bhutanese are called Lhopa (the Southern) at this place, and are very much dreaded, as they often make raids on this place for plundering the villagers of their cattle and grain. The skies were filled with rain clouds, and a slight shower fell. After making fruitless negotiations for securing our night's shelter under a roofed house, at last we came to the gate of the Sakyapa monastery, where many monks, the elders of the villages, and the villagers, including children and women, were standing in anxious expectation of the arrival of Je-tsun kusho of Sakya, who was just returning from a pilgrimage to Mon-chho-nag and other places of the South. The band was playing hautboys, drums, and the gigantic trumpets (called *Dung-chhen*). Gopon (our guide) winked at us not to speak, so we kept quiet, while he conversed with the villagers and succeeded in convincing them that we were not *Dukpas*. A kind-hearted *Gelong* (monk) conducted us to the interior of the monastery compound through a lofty doorway. The hall through which we passed was about 18 feet wide and about 15 feet high. Here the spectators were drawn up in two rows, and the Lamas of the monastery, dressed in their church costumes, were present to receive their revered lady, Je-tsun kusho. The *Gelong* agreed to accommodate us in the house of one of his friends. The *namo* (hostess), though very good-natured, still suspected us of being bad men from Bhutan, but being repeatedly assured by Gopon that we were not Bhutanese, she accommodated us in an out-house where ponies are halted, and furnished us with good *chhang* (malt beer). The stall was far from being comfortable; but since leaving Gyaṅ-tse I had been a stranger to comfort. Phurchung gave me a wretched meal. I slept well amidst the clamour of the religious service occasioned by the arrival of Je-tsun kusho.

24th October 1882.—We resumed our journey a little before sunrise. The streamlets were frozen and the ponies slid several times on the slippery ice; the wind was howling and extremely chill. My face, tightly bandaged with a piece of Assam silk cloth, was well protected; but my feet within the boots began to freeze, and I could hardly draw out my hands from inside the long sleeves of my lambskin vestments. There were no villages near the way. Far behind were the *dōkpa* tents, whence the howling of mastiffs was alone heard. From this distance the village and the monastery of Taling were visible. After two hours' journey we came to the edge of the Yamdo lake, a nook of which we had now almost doubled. We crossed the Shandung-chhu inlet of Yamdo with much difficulty owing to its being frozen. The Shandung monastery and the valley for some time formed the only object of importance within view. The morning sun had lengthened the shadows of the cliffs that overhang the Yamdo; so that we had to journey a long way under their shade, and could not enjoy the genial rays of the sun. To add to the discomforts a very chill, unwelcome breeze blew, freezing our extremities. We had a glimpse of the Chhoi-khor monastery, which is noted for its supplying the whole of Tibet with a class of fantastic dancers called Achi-Lhamo actors. Some of these professional players and dancers annually visit Darjeeling. As we came nearer we obtained fuller views of the Chhoi-khor monastery, which commanded a singular view, as it was situated like an eagle's eyrie amidst the bleak and sombre cliffs of Yamdo. Passing along the circuitous margin of another nook of the lake, we entered another broad valley with a stream in its middle flowing towards the lake. The large village of Ri-o-tag, I was told, was on this side of Yamdo. After an hour's ride we came within two miles of it. The plateau through which we now passed was several miles long and broad. To our right we saw at a distance of eight or nine miles the ruins of Ri-o-tag Jong. About a mile towards our right hand side we were shown a place near a village where we could breakfast, shortly passing the village we crossed the Ri-o-tag stream after which we crossed a saddle-like eminence. Beyond the latter is a stream flowing to the Yamdo, on the banks of which we halted for breakfast. This was a grassy patch of ground filled with cavities and mole hills. Phurchung prepared me a dish of boiled *phing* (vermicelli made of peas) and mutton with rice. At 10 A.M. we resumed our journey. We were now ascending an undulating plateau. This rose, as we proceeded, in successive retiring terraces, the undulations being in an ascending slope. These were covered with grass, now yellowish brown at the approach of winter. Presently the tortuous winding of the Yamdo came in view as

we ascended a gentle acclivity. An hour's ride brought us to the top of this ridge, which ran in a lateral direction from right to left till obstructed by the lake. From this eminence we saw the villages of Yurōp, Kegutag and Khyunpo-dō situated on the side of the lake. The country, though very thinly populated, yields extensive pastures, as could be judged from the healthy appearance of the numerous cattle—yak, sheep, goat, and donkeys grazing here and there. At 3 P.M. we saw a man coming towards us at a swift pace. Gopon accosted him, and after a short conversation found him to be his friend's son. As the man was going on urgent business to his home at Ri-o-tag, he said he could not come back to Shari in the evening, but begged us to pass the night at the house of his father-in-law, who was the richest man of Shari. Riding slowly down a gentle slope, we came to a flat dip, where we met a shepherd tending about three to four hundred sheep. He saluted me and pointed out to us the village of Shari, situated on the lee side of a ridge standing between Yamdo and a small lake about six or seven miles in circumference. The margin of this fresh water lake and the slopes on all sides were covered with excellent pasture, on which a number of cattle were grazing, while the lake itself abounded with wild ducks and swans, besides other water-fowl, all of which would have been very tempting objects for sportsmen. The village of Shari, which commands an excellent view of the smaller lake, being situated on an eminence on its bank, contained two rich families, the huts of whose *misser* (serfs) were scattered round their spacious houses. A long and well repaired *mandang* (votive pile of inscribed stones) with a pretty *chhorten* (*stūpa*) near it formed the frontage. Alighted near the *chhorten*, I sat on its plinth, and sent Gopon to negotiate for our night's accommodation. His acquaintance, who was unwell, was afraid of receiving us in his house, evidently from apprehension of smallpox. Gopon, however, after much entreaty, obtained his leave for our occupying the *Manilhakhang* (temple of the *mani* prayer wheel), and a maid-servant with a kettleful of tea came to conduct us to it. The *Manilhakhang* was a pretty turret-like stone house, measuring 8 feet by 10 feet inside with a small spire rising from the middle of its flat roof. Its outside was decorated with a dusky red cornice, and the stones of its bonded walls were painted with Buddhist figures, so it presented an inviting appearance. On entering I was received by a grey-headed man, and a small table was placed before me and tea poured in a China cup for my refreshment. The centre of the room was occupied by a *mani* cylinder (prayer-wheel) about three feet in diameter and six feet high. Its outside was covered with *mantras* (charms) in the *Lantsha* (Rañja character of Magadha) and the ever present mystic expres-

sion—*Ōṁ maṇi padmē hūṁ.* I spread my rug to the east of the cylinder, and accommodated myself in a space about four feet wide. The old man, whose sole occupation was to turn the prayer-wheel, had his bed at the opposite side. He continually muttered *Ōṁ naṇi padmē hūṁ.* The floor was good and remarkably clean; the walls were painted, containing basso-relievo figures from the Buddhist pantheon. There was no forage nor gram for our ponies. Phurchung cooked for me, and Gopon, after regaling himself with several bottles of *chhang* (malt-beer), went to sleep on the lawn-like margin of the lake, tethering the ponies to graze in the pasture. His friend had assured him that our ponies would not be removed by anybody during the night. The wind blew rather strongly during the first part of the night. I gave some rice and tea to the old man, who, considering me a sacred personage, prostrated himself several times to salute me, though I vainly tried to explain to him that being a layman I did not deserve such homage from anybody. When he came to receive my *chhag-wang* (benediction from the touch of the hand), I told him that I was no incarnate being, and could not place my palms on his grey head, but being equally subject to misery like himself, I could touch his forehead with mine as a token of sympathy with him as a brother man. I also pointed out to him the hands of Pema Juṅ-nē (Padma Sambhava) the saint, where he could apply his forehead for benediction.

But this only impressed him with still more pious feelings, and he called some of his acquaintances, a few shepherds, to prostrate themselves before me, which they did. The old man told us of the condition of the monastery of Shari Gonsar, situated on the top of a hill behind the village, and also of the village where we ought to halt next day. I passed the night very comfortably.

25th October.—I awoke early in the morning, about 4 o'clock, refreshed and in good spirits. The ponies saddled, we started for Khame-dō, our next stage. The wind began to blow afresh with much fury, and the chill was simply tormenting. My body, though well protected by lambskins, could not escape the penetrating effects of the cold, and began to freeze. After crossing two large inlets of the Yamdo, we came to a nook of the great lake. While traversing the little promontary overhanging this nook, we met a woman of about 40 cutting wild plants resembling brushwood. The cold was so severe that I could hardly bring out my hands from within the fur sleeves, yet the woman was doing her work as if it was a summer morning with her. The nook passed, we came to a solitary village with three or four huts belonging to two *dōk-pa* families. Some yaks were grazing on the margin of the lake, which here presented a very desolate and

solitary appearance. Some pointed rocks interposed here and there. This passed, we crossed a small *La* (hill) and descended towards another lake which, with its grassy flat shores and the undulating slopes above them, looked very lovely and cheering. The dark blue expanse of water, now ruffled by the wind, rose in gentle waves. This was the lake Rombu-dsa, which is fed by a few inlets. Our way partly lay along the dried margin of the lake, which was sandy, and partly in grassy paths above the highest water mark. We passed a caravan of yaks and donkeys carrying heaps of fuel, consisting of fragrant weeds and some wood. After a slow ride of two hours along the margin of this lake and a flat valley beyond it we entered into a gorge, from which we had a glimpse of the Yamdo lake. Here there are two roads to Khame-dō one by the side of the great lake, and the other *viâ* Melung village across the Lonagla Pass. I was told that the latter was rather difficult on account of the steepness of the *La*. I, however, preferred the more difficult route, having been informed that I would have to use the saltish water of the Yamdo at breakfast if I went by the easier one. Half an hour's ride from this gorge brought us to the village of Melung. It was past 11 A.M. when I dismounted at the door of the *Gambu's* (village headman) house. He received me with much politeness, and begged to know how he could serve us. We bought *chhang* for our use and hay for our ponies. I preferred to sit in the yard, which was filled with cowdung, the *Gambu's* house being very low and the ceiling covered with soot. The *Nabo's* (host) brother sat near us and had a chat with Gopon about the Chinese Ampa's movements, as *Ūlag* (road service) was demanded from them. After breakfast we resumed our journey, intent upon reaching the next stage, which according to Gopon would be the village of Khame-dō. Our guide always sought places for halting where he had acquaintances; so that sometimes we halted after marching long distances, and sometimes after very short marches. Passing a dried-up water-course filled with boulders and broken stones, we ascended the steep slopes of Lonagla, also filled with splinters, rocks, and gravel. There were evidently no pastures, but still a few yaks and sheeps were grazing at this barren place. Gopon picked up some flints, and told us that the village derived its name from the flints, as *mē* in Tibetan means 'fire' and *lung* a "valley." Hence Melung is fire or flint valley. The *La* was high, and our ponies were knocked up. From the village to the top of the Pass it was about a mile's distance. The *La* crossed, we entered another spacious and flat valley intersected by sparkling brooks. On the slopes of the hills here juniper and other fragrant plants grow in abundance. The pastures for yaks and sheep were of luxuriant growth. The grass of this pleasant valley, now

growing yellow, refreshed our eyes. There was a remarkable contrast in the appearance of the opposite sides of Lonagla. Crossing the bends of several tiny streams, and passing across the valley, we arrived at the village of Kha, where the men and women were engaged in threshing corn. Heaps of sheaves lay in their yards. We now found ourselves in an extensive open country, more resembling a plain. As we proceeded onward, we caught a glimpse of some *jong* (castle) standing on a distant isolated peak. The valley was filled with numerous villages. The villagers, intent on their work, did not care to inquire about us, but only now and then stared at us with some curiosity. The dogs of this place were very fierce and powerful, and kept barking as long as we remained in their sight. Passing many houses on our left, and walking a distance of about a quarter of a mile, we entered the large village of Khame-dō, which stands on the flat slope of the ridge extending to the back of the village of Kha. At the entrance of the village there were several *Mandangs*. After inquiring from several villagers where we could get accommodation for the night, we were pointed out the house of one of the richest residents of the place who usually received guests. Several seats made of slabs resembling marble were placed in the courts of their residences as well as in the open ground. The houses of the villagers were very good looking, large and white-washed. The barley stalks were stout and long. Gopon told me that some of these altar-like seats were made by potters and painted with lime. The villagers use them for basking in the sun. At 5 P.M. we came to the gate of the rich resident whose guest we were to be. After much knocking we succeeded in getting the door opened by an old woman, who, after inquiring what we wanted, disappeared. After a while the *nabo*, an old man of nearly seventy, made his appearance and showed us his stable, where we could pass the night. It was on account of our guide's foolishness that we failed to get better accommodation here, for he offered only to pay one *tanka* (six *annas*) as house-rent, whereas this miserly landlord asked for more. I paid the *nela* (rent) immediately, which pleased the old man, who at my request supplied us with two stuffed cushions and a screen. The latter was very useful, as at the time a strong wind blew and we had no other protection against it, for the stables in Tibet are not like those in India. They are stalls open on three sides. When my rugs were spread and I took my seat as a respectable man, the *nabo* drew near and began to converse with me about the harvest which the people had just reaped. The crop of this year, he said, was damaged by the September frost. We bought from him a *Phagri* (sheep burnt like a pig after slaughter). This yielded us very fat mutton. Our host was one of the rich-

est men of the village, which contained upwards of a hundred families. His house is very large and surrounded by a wall with three gates. There were plenty of willow, juniper and other fragrant plants in this village. The juniper plant formed a part of their fuel, which chiefly consisted of dried cattle dung.

26th October.—I rose from bed at sunrise. Our miserly *nabo* came early to take back from us the curtain and the fine articles which he had lent us. We parted with him after an exchange of polite expressions. He begged us to come to his house on our way back. We resumed our journey at 6 A.M. A villager joined us near the precipitous rock which stands at the entrance of the village on this side. He proved a pleasant companion for a few miles. We passed along the side of another small lake, and were shown the large village of Ling, the seat of the *Jongpon* of this side of the Yamdo District. This fellow talked of certain orders that were received by the *Jongpon* of Ling from Lhasa to examine strangers travelling within his jurisdiction. He also said that similar orders were sent to Sam-yea. We crossed two little streams with him by wading across them. When we came to the bank of a third stream, which was the largest, he parted with us after showing us the *rab* (ford). My pony, in wading through the half frozen stream, once sank up to his knees, Gopon extricated us with much exertion. The pony had several stumbles besides. We now entered the extensive table-land of Kamoling, the Arcadia of Tibet. Here were grazing hundreds of ponies belonging to the Government of Lhasa. The head of the Government stables has one of his establishments here. It took us several hours to cross a bend of this large pasture land. Its breadth was ten to twelve miles, but its length appeared very great. There was no water in the several water-courses which intersected the plain. In some of the streamlets bulging crusts of ice were seen. We were very thirsty. At noon we arrived at the village of Shabshe, containing nine or ten families.

We cooked our breakfast in the court of a poor woman's house, filled with goat's dung and some goats' hair-bags and hay. Our good *namo* kindly lent us some fire-wood. The object of our preferring dirty huts and stables in a village to clean flats and river banks was that we got fuel, water, water-vessels, &c., from the host, which, as a rule, were generally included in the *nela* (house-rent). The *namo* was a very well-behaved and obliging woman. Though very poor, she seemed to be in good spirits and cheerful. She has three children by two joint husbands. We bought one-fourth of a sheep at one *tanka* from one of her neighbours, and some barley meal, of inferior quality.

After breakfast we resumed our journey. As there were several

Under orders of the Council the following system of transliteration will be adopted for the future in all publications of the Society. Authors of papers for the *Journal*, Pt. I, are particularly requested to adhere to it in their contributions.

A. FOR THE DĒVANĀGARĪ ALPHABET, AND FOR ALL ALPHABETS RELATED TO IT.

अ *a*, आ *ā*, इ *i*, ई *ī*, उ *u*, ऊ *ū*, ऋ *r̥*, ॠ *r̥̄*, ऌ *l̥*, ए *e*, ऐ *ē*, ओ *o*, औ *ō*, ऐ *ai*, औ *au*, ं *ṁ*, ँ ˜ : *ḥ*

क *k*,	ख *kh*,	ग *g*,	घ *gh*,	ङ *ṅ*
च *c*,	छ *ch*,	ज *j*,	झ *jh*,	ञ *ñ*
ट *ṭ*,	ठ *ṭh*,	ड *ḍ*,	ढ *ḍh*,	ण *ṇ*
त *t*,	थ *th*,	द *d*,	ध *dh*,	न *n*
प *p*,	फ *ph*,	ब *b*,	भ *bh*,	म *m*
य *y*,	र *r*,	ल *l*,	व *v*,	(ळ *l̤*)
श *ç*,	ष *ṣ*,	स *s*,	ह *h*.	

In the above the *virāma* has been omitted for the sake of clearness.

In Modern Vernaculars only; ऋ may be represented by *r̥*, and ढ़ by *rh*.

Avagraha is to be represented by an apostrophe, thus सो ऽपि *sō 'pi*. *Visarga* is represented by *ḥ*, *Jihvāmūlīya* by *ḫ*, and *Upadhmānīya* by *ḫ*. *Anusvāra* is represented by *ṁ*, thus संसर्ग *saṁsarga*, and *anunāsika* by the sign ˜ over the letter nasalized, thus चँ *ā̃*, चाँ *ã̄*, and so on. The *udātta* accent is represented by the sign ´ and the *svarita* by ˆ. Thus, अग्निः *agníḥ*, जनिता *janitā́*, क्व *kvá*, कन्या *kanyā́*. The *anudātta* accent may be represented by ˋ. Thus, ते अवर्धन्त *tḗ àvardhanta*.

B. FOR PERSIAN (INCLUDING ARABIC WORDS IN PERSIAN) AND HINDŪSTĀNĪ.

(The system is not applicable to Arabic when pronounced as in Arabic-speaking countries) :—

Vowels.	Consonants.	Sounds only found in Hindūstānī.
ا a	ب b	ﺑﮭ bh
آ ā	پ p	ﭘﮭ ph
ا i	ت t	ﺗﮭ th
ای ī		ٹ ṭ
ے ō		ٹھ ṭh
ا u	ث s	
او ū	ج j	ﺟﮭ jh
و o	چ c	ﭼﮭ ch

Vowels.	Consonants.	Sounds only found in Hindūstānī.
اَیْ ai	ح h	
اَوْ au	خ kh	
	د d	ڈ dh
		ڈ̣ ḍ
		ڈ̣ھ ḍh
	ذ z	
	ر r	ڑ ṛ
		ڑھ ṛh
	ز z	
	ژ zh	
	س s	
	ش sh	
	ص ṣ	
	ض ẓ	
	ط ṭ	
	ظ ẓ	
	ع ‘	
	غ gh	
	ف f	
	ق q	
	ک k	کھ kh
	گ g	گھ gh
	ل l	
	م m	
	ن n	
	ں when representing *anunāsika* in Dēva Nāgarī, by ˜ on the preceding vowel	
	و w (or rarely v)	
	ہ h	
	ی y	
Hamzah	ا (where necessary) ’	

The ل of the article ال in Arabic words should be assimilated before the solar letters; and the vowel *u* which often precedes the article and absorbs its vowel should remain attached to the word to which it belongs. Thus—اقبال الدولة Iqbālu-d-daulah.

Tanwīn may be rendered by *n̲*—e. g., *ittifāqan̲*. *Alif-i maqṣūrah* should be rendered by *ā̤*.

Final ہ need not be written in Persian and Hindūstānī words, but should be written in Arabic words.

ways leading in different directions, our good *namo* kindly accompanied us a short distance to show us the way to Sam-yea. There were other villages scattered in this upland plain, which passed we came to the little village of Tan-tha, situated at the foot of the *La*, we were about to ascend. Climbing up a short distance, we came near some well-constructed recluse's cells, now empty. These from a distance appeared like some monastic establishments. Gopon showed to me the monastery, situated on a dome-shaped hill near the lake, but half a mile off from the place. The ascent from here was very tiresome. But all these fatigues vanished when the height gradually widening the horizon brought sublimer scenes to my enchanted eyes. I really thought that the view from the top of Thib-la, of the snowy country of Tibet, of her far-famed lake and river, and of an immense congregation of snowy mountains which skirts like silvery fringes, on the vanishing line of the dark blue sky in the horizon, cannot be equalled by the sceneries of the glorious Himalaya. The numerous windings of this *scorpion lake*, as Yamdo is called, the countless hills and mountains which they surrounded, and the waving line in the horizon where the snows of Noijon Kang-Zang mingle with the blue summits of distant mountain ranges, were all visible from Thib-la. The valley of the deep and meandering Tsañpo, the dark pine and fir forests which here and there broke the monotony of the bleak mountain scenery, and the snowy mountains of Lhobra, bore a striking contrast to the scenery on the other side. Both defy description. On the southern flanks of this lofty pass, which appeared to be more than four thousand feet above the lake, a kind of broad-leafed plants, called *yeshi kogo*, grow. The dried leaves rustled as they were blown by the wind. The wind blew so strongly that I found it difficult to stand. This increased the fatigues of this exceedingly trying journey along the steep slopes of Thib-la. The down-hill journey was worse than the up-hill one. At 5 P.M. we arrived at the village of Thib. There were about ten houses in this little village, all clustered together and only separated from one another by narrow lanes and barley fields. Heaps of hay and unthreshed barley lined these little avenues. There were some willows of stunted growth in the village. We were conducted to the house of a well-to-do villager. The *namo* received us very kindly. One of her husbands was in the field reaping barley crop. Her elder husband was gone to Lhasa. We were accommodated in the upper floor of her house which was spacious enough. A part of the house was under repair. The night was very fine and the skies bright, and the little village with its white-washed houses and fields was bleached with moonlight.

An ancient inscribed Buddhistic statue from Çrāvastī.—*By* THEODOR BLOCH, PH.D.

[Read March, 1898.]

The statue with which I am dealing in this paper, was discovered by General Cunningham during the working season of 1862-1863 among the ruins of the modern Set-Mahet, in the Gonda District, Fyzabad Division, of Oudh. It was presented by His Excellency the Viceroy Lord Elgin to the Asiatic Society of Bengal in 1863, and is now in the Indian Museum. It is a colossal standing figure,[1] 11′ 8″ high, made of a sort of reddish sand-stone, the same material which the Mathurā sculptures of the Kuṣaṇa period are made of. The head, the halo, and the right arm are almost entirely gone; the left hand is slightly damaged. The body is represented clad in a large garment, which leaves bare the right shoulder only. It is tied round the waist by a girdle, and reaches down to the ankles; round the left shoulder it is laid in the fashion of a Roman tunica. The feet are naked, and a peculiar object of uncertain meaning is represented standing between them. The statue has always been described as an image of Buddha, but from what follows it will become clear that this is not quite correct. It is a figure of a Bōdhisattva, and not of a Buddha. But, in any case, we may fairly well conclude from the analogy of similar statues that the missing right arm of the figure was represented lifted up in an attitude which is usually called that of "teaching," while the left hand rested on the hip, holding up the end of the long vestment.

The most important part of the statue, however, is its pedestal. This is due to the fact that it contains in three lines an inscription in ancient characters of what Prof. Bühler in his Indian Palæography has called "the Northern Kṣatrapa type" of the last century B.C. or the first A.D. This inscription has been edited before by *R. L. Mitra*,

[1] The statue has been described or referred to previously by General Cunningham in Archæological Survey Reports, Vol. I, p. 339, Vol. V, p. VII, and Vol. XI, p. 86, and by Dr. Anderson in his catalogue of the Archæological Collections in the Indian Museum, Vol. I, p. 194.

in this Journal, Vol. XXXIX (1870), Part I, p. 130, and Plate VII, No. XXI, and by Prof. *Dowson* in Journal of the Royal Asiatic Society, New Series, Vol. V, p. 192 and Plate 3, No. XXXII.[1] Both these editions are very unsatisfactory indeed, and it is for this reason that I now re-edit this ancient document.

The pedestal which contains the inscription, measures 3′ by 6″; the inscription consists of three lines of writing, the size of which varies between $1\frac{3}{4}$″ and $\frac{1}{2}$″. Unfortunately the greater portion of the first line and a few characters in the beginning of the second are entirely gone; the remainder, however, is in a fair state of preservation. The lost portion contained the date, and it is owing to its loss that we are to resort to palæographic evidence for the purpose of forming an idea as to the age of the record itself and of the statue on which it is inscribed. I have already above stated my opinion on this point in describing the characters of the inscription as belonging to the "Northern Kṣatrapa Type." This type is to be found in the inscriptions of the *Mahākṣatrapa Çuḍasa* or *Çōḍāsa*, the son of *Ranjubula*, whose reign in the North-West of India preceded that of the Kuṣaṇa Kings Kaniṣka, Huviṣka, etc. Of Çōḍāsa, hitherto three inscriptions[2] have been found, *viz.*:—

(1) An inscription from the Jail Mound in Mathurā: Arch. Surv. Rep., Vol. III, p. 30, and No. 1, Plate XIII;

(2) An inscription from the Kaṅkālī Tilā at Mathurā: Ep. Ind., Vol. II, p. 199, No. II (with facsimile);

(3) The Mora Well Inscription: Arch. Surv. Rep., Vol. XX, p. 48, and Plate V, No. 4.[3]

Compared with the considerably larger number of Kuṣaṇa inscription, the characters of these documents differ in the following points:—

(*a*) the letter *ya* when forming the second part of a compound (*saṁyuktākṣara*) is expressed by its full sign, not by the ligature: so in No. 1 (Mathurā Jail Mound Inscription) throughout, *viz.*, *svāmisya*, *mahākṣatrapasya*, *Çōḍāsasya* (A. S. R., Vol. III, Pl. XIII); in No. 2 and No. 3 no compound letter with *ya* occurs;

(*b*) the upper cross-bar of the letter *ṣa* consists only of a short horizontal line attached to the left hand vertical line of the letter, while in the Kuṣaṇa *ṣa*, as a rule, it reaches as far as the right hand

[1] See also Cunningham, *l.c.*, p. 339, and Vol. XI, p. 87.

[2] With the exception of Mathurā Lion Capital, of course, which is inscribed in Kharōṣṭhī.

[3] This is, correctly spoken, only an inscription of a son of Rājūvūla. His name is lost, but, in all probability, he was Çōḍāsa. A photo taken from an impression of this inscription is in the Indian Museum.

vertical line. This rule also holds good throughout in all the three inscriptions, *viz.*, No. 1, l. 1: *kṣatrapasya*, l. 2: *puṣkariṇī* (twice); No. 2, l. 2: *kṣatrapasa*, l. 3: *ghōṣēna* (twice); No. 3, l. 1: *kṣatrapasa*, l. 2: *vṛṣṇēna*, l. 4: *vapuṣā*;

(*c*) the more archaic form of *ça* is preserved, against the Kuṣaṇa form of this letter, which is nearly like a *ṣa* turned upside down: compare *e. g.* the *ça* of *Çōḍāsasa* with *çiçini* of Nos. II and XI, Ep. Ind., Vol. II, p. 199 and 201;

(*d*) of compound letters, as a rule, the top of the second lower-most letter is marked by the *serif*, this letter being not merely a continuation of the down-stroke of the first. Thus, in No. 1, l. 1: *mahākṣatrapasya*, *çōḍāsasya*, l. 2: *paçcima*, *staṁbha*;[1] in No. 2, l. 2: *svāmisa*, *mahākṣatrapasa*, *saṁvatsarē*; in No. 3, l. 3: *yastā*, l. 4: *jvalatā*;

(*e*) the writing, as a rule, is done with greater care and shows a preference for angular forms, against the cursive, slovenly executed letters of the Kuṣaṇa Inscriptions. This will become clear at once by glancing over the facsimile-plates of Prof. Bühler's articles on Mathurā Inscriptions in Ep. Ind., Vols. I and II.

The same peculiarities of writing which, I trust, will be considered sufficient proof of an earlier age of the Northern Ksatrapa type, as compared with the Kuṣaṇa type, occur also in a number of cognate inscriptions from Mathurā or the country around it. Thus, *e.g.*, in the Anyor Inscription in A. S. R., Vol. XX, Plate V, No. 5, and in Mathurā Inscriptions, ed. Bühler, Ep. Ind., Vol. I, No. 33; Vol. II, No. 4, 5 and 7. Among the Kuṣaṇa Inscriptions, I know of only one document which exhibits the same characteristics. It is the inscription on the Elephant Capital from the Kaṅkālī Tīlā at Mathurā, figured in Plate V of A. S. R. Vol. III.[2] This inscription is dated in the reign of

[1] Of this inscription I have only seen the facsimile in Plate XIII of A. S. R., III, which is not altogether reliable as to these minor details.

[2] *See also* p. 20 *of text.* Of this interesting sculpture, the Indian Museum also possesses a photograph. In the Inscription it is said to be a *Nandiviçāla*, which may mean, that the pillar was "as big as Nandin," but which also may be a technical term of unknown meaning. It is a Jaina sculpture, as may be seen from the concluding line of the inscription, which records that the monument was erected *Arahaṁtanaṁ pujāyē* 'in adoration of the Arhants.' The inscription, according to the photograph, reads:

(line 1) [*Ma*]*h*[*ā*]*r*[*ā*]*jasya Dēvaputrasya Huviṣkasya saṁ 30–8*

(line 2) *hē 3 di 10–1 ētāyē purvvāyē naṁdi-viçālō*

(line 3) *pratiṣṭhāpitō Çivadāsa-çrēṣṭhi-putrēṇa çrēṣṭhinā*

(line 4) [*A*]*ryyēṇa Rudradāsēna Arahaṁtanaṁ pujāyē.*

This means: "On the 11th day of the 3rd half-month (*pakṣa*) of the cold season, in the year 38, (*during the reign of*) Mahārāja Dēvaputra Huviṣka, on this date (*specified as*) above, this (*pillar which is*) as big as Nandin (?) has been set up by

Huviṣka, in the year 38 (38 in text; the plate gives 18), and here too the ancient form of *ṣa* is preserved throughout; but *ya* in compound letters is given in its full form only once, in *āryyēṇa* (line 4), and the rule as to the *seriff* on top of the second part of compound letters never appears to be observed. Thus, this isolated document cannot prove much against what I have said above as to the difference between the Northern Kṣatrapa and Kuṣaṇa type of writing.

Now it is the former, not the latter, type to which the characters of the inscription from Çrāvastī almost decidedly belong. This will be clear even from the facsimile given by Prof. Dowson.[1]

Thus: (*a*) the letter *ya* in compounds is expressed by its full form throughout with the only exception of *puṣya* in line 1, where we have a ligature of exactly the same form as *e.g.* in the various compound letters *sya* in No. 12, of A. S. R., Vol. III, Plate XIV; thus, in line 1: *bhikṣusya*, line 2: *saddhyavihārisya*, *bhikṣusya*, *Balasya*, *trēpiṭakasya*, line 3: *acaryyāṇāṁ*;

(*b*) *ṣa* is written in its ancient form, with a small cross-bar, throughout: *viz.*, line 1: *bhikṣusya*, *Puṣya*, line 2: *bhikṣusya*;

(*c*) *ça* occurs in its archaic form throughout: *viz.*, line 2: *dāṇḍaçca*, *Çāvastiyē*;

(*d*) the rule as to the *seriff* in compound letters is observed almost throughout: *see* line 1: *purvayē*, *bhikṣusya*, line 2: *saddhyavihārisya*, *bhikṣusya*, *Balasya*, *trēpiṭakasya*, *bōdhisatvō*, *chātraṁ*, *dāṇḍa*, *Çāvastiyē*, line 3: *acaryyānāṁ*, *sarvastivādinaṁ*. There is only one exception from this rule, *viz.*, the letter *çca* in *dāṇḍaçca* (line 2). This letter exhibits a cursive form, which looks very much like *çya*, but there remains no doubt as to the correctness of my reading, as may be seen from the context;

(*e*) the shape of the letters is decidedly more angular and reminds one strongly of the letters in Çōḍāsa's inscriptions. In addition to this, I must call special attention to the *ḍa* of *dāṇḍaçca* (line 2), which is of a much more archaic form than that usually met with in Kuṣaṇa, or even Northern Kṣatrapa inscriptions.

It is for all these reasons that I am inclined to believe that the inscription contained a date referring to the reign of one of the Kṣatrapa

the Seth, the noble Rudradāsa, the son of the Seth Çivadāsa, in adoration of the Arhants." Both the Donor's and his father's name are compounds made with Çiva, the pillar is described as being as big as Nandin, the famous vehicle of Çiva; but the concluding words dedicate the monument to the Arhants. Jainism apparently already in those early times was as much mixed up with Çaivism as its greater rival, Buddhism.

[1] I regret that it is impossible at present to publish a photograph of the Statue or a facsimile of the Inscription.

predecessors of the Kuṣaṇa Kings.[1] The inscription, accordingly, and so also the statue itself, belong to the last century B.C., or the first century A.D., for the question as to the date of those Northern Kṣatrapa Kings depends entirely on the date of Kaniṣka and his successors, a point, on which, to my mind also, Mr. Fergusson's phantastical conclusions have been too readily accepted by Prof. Oldenberg and others. In any case, there remains no doubt that the statue is one of the oldest Buddhistic images which hitherto have been found in India.

I now publish my transcript of the inscription, made from the original stone:

Transcript.

(line 1). . . . . .

१० ७ एतये पुर्वये भिक्षुस्य पुष्य .

(line 2). •[स्य][2]सङ्घविहारिस्य भिक्षुस्य बलस्य त्रेपिटकस्य दानं बोधिसत्वो[3] छात्रं दण्डश्च श्रावस्तिये भगवतो चंकमे

(line 3). कोसंबकुटिये अचर्य्याणां सर्वस्तिवादिनं[4] परिग्हे ॥

Translation.

"(*During the reign of*—, *in the year*—, *season*—, *half-month*—, *on the*) 19th (*day*), on this date (*specified as*) above (*this statue of*) a Bōdhisattva (*together with*) an umbrella and a stick, (*being*) the gift of the monk Bala, a teacher of the Tripiṭaka, (*and*) fellow-wanderer of the monk Puṣya-(*mitra*), (*has been set up*) in Çrāvastī, at the place where the Blessed One (*i.e.*, Buddha) used to walk, in the Kōsaṁbakuṭī, for the acceptance of the teachers belonging to the Sarvāstivāda-School."

The language of this inscription is the well-known mixed dialect of Sanskrit and Prakrit which is met with in all the Mathurā Inscriptions of the Kuṣaṇa period and thereabout. Practically it is the same

[1] The date must have contained a reference to the reign of a king. The broken portion of line 1 is much too long for a simple date, expressed, moreover, only by *saṁ* and similar abbreviations, as is the rule throughout in Mathurā and other cognate Inscriptions.

[2] Only the second portion, *viz. ya*, of this compound letter is visible. It is, however, evident that this *ya* belonged to the Genitive-termination of the proper name beginning with *Puṣya*, which may be conjectured to have been *Puṣyamitrasya*.

[3] Traces of the first *ō* of *Bōdhisatvō* are still visible on the stone.

[4] The letter *vā* of *Sarvastivādinaṁ* has been added later. It is very small and hardly visible on the facsimile, but clear enough on the stone. Apparently the "additional letter *ta* between *sarvasti* and *dinaṁ*, shown in R. L. Mitra's copy" as mentioned by Prof. Dowson (l. c. p. 192) is this letter *vā*.

language in which the *gāthās* of the Lalitavistara or similar Buddhistic books are written, and which I consider with Prof. Bühler, Kern and others to be the result of persons who spoke Prakrit and were unlearned in Grammar, trying to write Sanskrit. In fact till very late at the end of the Buddhistic period, all the Buddhistic Inscriptions are notorious for their neglect of the rules of spelling and grammar, and also the Buddhistic Sanskrit Literature, with a few rare exceptions, can not certainly be called classic as to its style, whatever its merits else may have been. The fact that the mixed dialect is exclusively used in the inscriptions of Kaniṣka and even earlier certainly proves the correctness of the Buddhistic tradition which places the translation into Sanskrit of the Buddhistic Scriptures into the time of Kaniṣka. In the Çrāvastī Inscription, we meet with the following instances of mixed forms, being half Sanskrit and half Prakrit :—

(*a*) the Loc. Sing. of feminine nouns in *ā* or *i* is *-ayē* (*i.e*, *-āyē*) or *-iyē*; thus : *ētayē purvayē* (l. 1), *Çāvastiyē* (l. 2), *Kōsaṁbakuṭiyē* (l. 3) ;

(*b*) of masculine nouns in *i* or *u*, the Genitive Sing. takes *-sya*; thus : *bhikṣusya* (ll. 1 and 2), *saddhyavihārisya* (l. 2) ;

(*c*) compound letters are sometimes given in their Sanskritic, sometimes in their Prakritic form ; thus *caṁkamē* (l. 2), *parigahē* (l. 3.) for Skt. *caṁkramē* and *parigrahē*, against *saddhyavihārisya* (l. 2; Sanskrit *sadhryagvihārin*) and *acaryyāṇāṁ* l. 3 (Skt. *ācāryāṇāṁ*). Another instance is *Çāvastiyē* (l. 2) for Skt. *Çrāvastyām* ; this form, however, curiously enough re-occurs in the Bhāgavata Purāṇa (see Petersburg Dictionary s. v. *Çāvastī*) ;

(*d*) long vowels before compound letters are shortened as a rule, in accordance with Prakrit ; thus : *acaryyāṇāṁ Sarvastivādinaṁ* (l. 3) for Skt. *ācāryāṇāṁ Sarvāstivādināṁ*. The long vowel of *chātraṁ dāṇḍaç=ca* (l. 2) for Skt. *chattraṁ daṇḍaç=ca* which is perfectly clear on the original stone, is due to the vernacular pronunciation, and agrees with such forms as *āṁtēvāsi* for Skt. *antēvāsi* in various other Mathurā Inscriptions, and the genitive termination *-āsa* instead of *-assa* in Bharhut.[1] The sandhi of *dāṇḍaç=ca* (*ibid.*) is, of course, an instance of the opposite tendency ;

(*e*) a form of peculiar interest is *saddhyavihārin* in line 2. It corresponds to *sādhivihārin* in Sanchi Inscriptions, I, 209 (Ep. Ind. II, p. 379), where it has been translated 'fellow-wanderer' by Prof. Bühler (*l. c.*). Its first part is in Pāli *saddhiṁ*, which in the dialect of this Inscription becomes *saddhya*. This clearly shows that Pāli *saddhiṁ* does not go back to Sanskrit *sārdhaṁ*, as has been hitherto assumed by most scholars, but to Sanskrit सध्र्यक् *sadhryak*, as has been first recognized by Prof. Pischel.

[1] *See* Bühler, Epigr. Ind., Vol. II, p. 195.

The Inscription records the gift of a Bōdhisattva by a monk Bala to some teachers of the Sarvāstivāda School, who resided at Çrāvastī. He is called "a fellow wanderer (*saddhyavihārin*) of the monk Puṣya—(probably Puṣyamitra)" and a *Trēpiṭaka* or in Sanskrit *Traipiṭāka*, *i.e.*, "one who has studied or teaches the Tripiṭaka." A similar term, *pēṭakin*, is met with as early as the Bharhut Inscriptions,[1] and in later time we find the same title in the Inscription No. 6 from Kanheri (Arch. Surv. Rep. Western India, Vol. V, p. 77), a document written in characters of the 4th or 5th century A.D., where we read of a "*traipiṭakōpāddhyāya-bhadanta-Dharmavatsa*.[2] This clearly proves that the Tripiṭaka must have been studied in India till at least the end of the 5th century A.D. The existence in these days at and near Mathurā of the school of *Sarvāstivādins*, to which the recipients of the gift belonged, is well-known to us already from cognate inscriptions, and does not call for any remark.

By far the most important statements of the inscription, however, are the description of the gift itself, and of the locality where it was set up. The former is described as "a statue of a Bōdhisattva, an umbrella and a stick" (*Bōdhisatvō chātraṁ dāṇḍaç=ca*, line 2). The Bōdhisattva of course is the statue on which the inscription is engraved; the umbrella apparently surmounted the statue, similar ones being frequently met with among the sculptures from Gandhara. In Bharhut, Sanchi and Gaya the presence of Buddha is generally indicated by a throne (*vajrāsana*) surmounted by an umbrella, and these also remain associated with him in later Buddhistic art. It is evident that the umbrella belongs to Buddha because he is a *cakravartin*, just as the wheel, the sign of the unrestrained progress of the law, marks him as an *apratihatacakra* or 'universal king.' According to the Lalita Vistara, the two signs of royalty, the umbrella and the two chowrees appeared already at his birth; we read here (p. 96) that at that time *antarikṣē dvē cāmarē ratnacchattraṁ ca prādur abhūt*, and among the various relievos from Gandhara representing this scene, which are now in the Indian Museum, there is one on which the artist literally followed the poet's words and sculptured a chowree hanging in the air. The stick (*dāṇḍaç=ca*) I believe to have been a portion of the umbrella by which it was connected with the halo surrounding the head; it may have been laid out with jewels

1 See Dr. Hultzsch's Edition in Zeitschrift d. Deutsch. Morgenl. Ges., Vol. XL, p. 74 and Indian Antiquary, Vol. XXI, p. 23 f, No. 134.

2 I believe *traipiṭaka* and *upādhyāya* are two different titles of Dharmavatsa. He was one who had studied the three Piṭakas, and he had acquired the academical degree of *Upādhyāya* or "teacher." *Traipiṭaka* also occurs very often as a distinguishing title in Tārānātha's Tibetan History of Buddhism in India, where Schiefner translates, "*Dreikorbhalter*."

or some precious stones, for if it was merely a piece of wood or iron, no reason seems to me why the inscription mentions it specially. The umbrella, then rightly might have been called a *ratnacchattra*.[1]

The statue itself is described as an image of a Bōdhisattva, not of a Buddha. To everyone who is acquainted with the ancient Buddhistic scriptures, it is well known that these two terms are never used promiscuously, but strictly distinguished from each other,[2] and that such a supposition would be quite out of place here, may be easily seen by comparing this word with the other *Bhagavatō caṁkamē* in the same line of the Inscription, where Buddha is spoken of as *Bhagavān*. This can be easily confirmed by looking over other ancient inscribed statues of Buddha. Here, with one exception only, the term *Bōdhisattva* is never employed in describing the image, but such other terms as *Buddha*, *Tathāgata*, *Bhagavān*, *Çāstā*, etc., which also in literature signify the teacher after he had reached the state of enlightenment, in distinction from the preliminary stage of a *Bōdhisattva* or, as it is generally explained, "a being that in this birth is destined to reach the *bōdhi*, without being born again." I refer to the following inscriptions:—

(1) An Inscription on the pedestal of a large statue of Buddha, in Anyor near Mathurā: A. S. R. Vol. XX, p. 49 and Plate V, No. 5: the characters of the Inscription belong to the Northern Kṣatrapa type. The statue is described in line 1 as *Buddha-pratimā*;

(2) An Inscription, incised on the base of a large seated Buddha, found in the town of Kāman: Epigr. Indica, Vol. II, p. 212 and No. 42 of Facsimile Plate. The date of the Inscription *Saṁ* 74 with all probability refers to the Kuṣaṇa

[1] I must at least mention one other possible, though highly improbable, explanation of the words. On the Mathurā Lion Capital a *samanachatra* is mentioned which Prof. Bühler hesitatingly translated by 'a stūpa of a monk;' see Journ. Roy. As. Soc., New Ser., 1894, p. 536, note 6. He refers to the modern *chatri* which is used for a certain class of tomb-like monuments not uncommon in Northern India, which, however, to my mind do not seem to have any structural resemblance with a Buddhist stūpa, but rather look like Muhammadan *Maqbirahs*. But, granted the correctness of this explanation, then we might take *chātraṁ* in our Inscription as 'a stūpa'; *daṇḍa* might refer to something similar to the *yaṭhi* (*yaṣṭhi*) in the Sue Bihar Inscription; see Dr. Hoernle's edition in Ind. Ant., Vol. X, p. 327, probably 'a metal rod containing the seven precious substances, and deposited inside the stūpa.' This explanation, though scarcely probable, would however, prove important for the question as to whether the statue has been found by General Cunningham in situ, or not.

[2] A few isolated instances adduced by Prof. Windisch in his *Māra und Buddha*, p. 211, cannot prove anything for the time to which this statue belongs.

Era. The statue is described as *Bhagavatō Çakyamunina* (read :—*muninō*) *pratimā*;

(3) An Inscription on a statue of Buddha from Mankuar: Fleet, Gupta Inscriptions, p. 45. The Inscription is dated in the 129 of the Gupta Era, corresponding to 448–449 A.D. The statue is described as *Bhagavatō samyak-sambuddhasya sva-matā-viruddhasya...pratimā*;

(4) An Inscription under a figure of Buddha in the Kanherī Caitya Cave No. III: Arch. Surv. Rep. of Western India, Vol. V, p. 77, No. 6. The Inscription is written in characters of the Western alphabet of the 4th or 5th century A.D. The figure is called *Bhagavat-pratimā* (line 3 of inscription);

(5) An Inscription on the base of a statue of Buddha from Sarnath, near Benares, now in Indian Museum: Fleet, Gupta Inscriptions, p. 281. The Inscription, on palæographical grounds, may be allotted roughly to the 5th century A.D. The statue is labelled as *pratimā Çāstuḥ*.

These are the only ancient Buddha statues, as far as I know, which contain Inscriptions giving us a clue as to the meaning of the image. But there is one remarkable statue still left which I have already been alluding to above. It is a statue of a seated Buddha from Budh Gaya, figured by General Cunningham in his *Mahābōdhi*, Plate XXV, and described *ibid.*, p. 53. This statue is also now in the Indian Museum, but unfortunately an inspection of the original sculpture does not give any more help in deciphering the mutilated Inscription on the base. On the contrary, some more letters have still broken off, and not even the whole context of Cunningham's facsimile is now to be found on the stone. But so much at least seems to me certain that its purport was to record the fact that a certain *Bhikṣu* set up this statue of a Bōdhisattva, who was represented as seated on a *siṁhāsana*, traces of which are still visible on the sculpture behind the neck of the figure. Thus, I believe, the words in line 2 of the Inscription, *viz.*, *Bōdhisattva-pratimāṁ siṁharathē pratiṣṭhāpayati* are best accounted for. Here then again we have a statue of a Bōdhisattva, not of a Buddha.[1]

How then is this discrepancy to be accounted for? There is nothing in the head-dress to distinguish the Gaya Image from any

1 I do not agree with General Cunningham referring the date 64 of line 1 of the Inscription to the Çaka Era. The form of some letters of the Inscriptions, especially of *sa*, is much later and the true date probably lies 150 or 200 years behind. I am unable to make anything out of the name of the *Mahārāja* mentioned in the beginning of the record.

ordinary Buddha statue of about the same time or even later. With respect to the Çrāvastī Image, we must leave off this point at all, as the head unfortunately is broken.[1] But the point, on which both the Gaya and Çrāvastī image are alike to each other, while they differ from any ordinary Buddha statue, is the shape in which the garment is laid round the body, leaving naked in both the right shoulder. The ordinary type of Buddha represents the teacher dressed in the *saṁghāṭi* that large vestment which covers the whole body of a Buddhist monk, reaching to the ankles and leaving bare only the neck and the shaved head. It looks, indeed, very much so as if Buddhist artists in trying to revive the figure of their divine Lord in painting or in stone, did not imitate any other type among the Hindu Pantheon, but tried to depict the Lord so as the pious mind believed him to have been, and the model from which the first statues of Buddha were made, was the appearance of an ordinary Bhikṣu, just as the Jainas made the images of their *Tīrthaṁkaras* look like an ordinary Yati. If General Cunningham, therefore, with respect to the Çrāvastī statue says that "the right shoulder is bare as in all Buddhist figures" (Arch. Surv. Rep., Vol. I, p. 339), this is decidedly wrong. The evidence adduced above rather leads us to believe that *wherever we find a Buddhist statue which has the right shoulder bare, this is to be taken as a sign that the statue represents not a Buddha, but a Bōdhisattva.*[2]

It is not my intention here to press this argument. The evidence, I admit, is but scanty, and the subject is one which still labours under great difficulties. I merely want to point, in connexion herewith, to two other facts which tend to corroborate the result thus arrived at. The first point is taken from the Gandhara sculptures. Here the type with the right shoulder bare, occurs only in connection with a particular position of the hands which is generally described as

[1] I know of one more Buddha statue of very much the same style as the Çrāvastī Image. It is only the upper part of the statue, shown on a photograph in the Indian Museum together with the statue described in A. S. R. X, 5, which Dr. Führer in his List wrongly calls an image of Açvaghōṣa, but which really seems to be an image of a Nāgarāja. Here the head is preserved; it is without any ornament or dress, the hair represented in the same conventional way as in the Mankūar Image where Mr. Fleet erroneously speaks of "a close fitting cap." The *uṣṇīṣa* or 'skull-born' is also seen on this fragment. The vestment is very much like the Çrāvastī Image.

[2] There is, of course, one more point in the shape of the dress of this statue which is against the ordinary fashion of Buddha images, *viz.*, the girdle round the waist. The vestment of the Çrāvastī image is decidedly not the *saṁghāṭi*, while those from Gandhara and Bihar, referred to further on, appear to be clad in this garment.

dharmacakramudrā, and which Prof. Grünwedel in his valuable "*Handbuch der Buddhistischen Kunst in Indien*" (Berlin, 1893, p. 146 ff) has from independent reasons, tried to establish as a characteristic of statues representing not *Çākyamuni*, but the future Buddha *Maitrēya*. Maitrēya, according to Buddhist Mythology is not a Buddha yet, and I question the correctness of Prof. Grünwedel's words who calls these statues representations of "Maitrēya as Buddha." To my mind, it would be more appropriate to speak of them as "statues of Maitrēya," and from the result which I have arrived at above, it is extremely probable that the fact that such statues wear the right shoulder uncovered by their vestment, is due to their being representations of a Bōdhisattva, in this particular case the Bōdhisattva Maitrēya.[1] The next point in connexion herewith refers to the Bihar Buddhist statues. Among these, I have met with the type of Buddha with his right shoulder bare only in connection with a peculiar attitude of the hands commonly called "*bhūmisparça-mudrā*."[2] This holds good almost throughout, as far as I know. Now it is my opinion that this particular attitude where Buddha touches the earth with the top of the fingers of his right hand, while the left lies in his lap, always is intended to depict him as sitting under the Bōdhi-tree (which indeed is always represented on such statues), and calling the earth as a witness during his great struggle with Māra. This opinion of mine rests on the fact that in some of the Bihar images belonging to this type the demons of

[1] There remains of course one doubtful point. Some statues of a different type, representing figures in royal dress, and formerly called "statues of princes," have been explained by Prof. Grünwedel as representations of Maitrēya. How then is this difference in type to be accounted for? I can see no reasonable explanation. My above statement rests on careful examination of the Indian Museum collection of Gandhara sculptures, among which there are about 200 images of Buddhas or Bōdhisattvas, coming partly from Swat, partly from Yūsufzāī (Jamālgarhī, Takht-i-Bāhi, etc.). I have come across only one exception, *i.e.*, a figure seated cross-legged, the right shoulder bare, and the right hand raised in the attitude of teaching. On the base of the statue, a small relievo of the *Indrasālaguhā* scene is sculptured (see my note in Proceedings, A. S. B., 1898, July, p. 186 ff). My statement referring to the Bihār sculptures also is based on the Indian Museum collection; the number of Buddhist statues among them may be given approximately as 200. Their date, as will be known, is the time of the Pāla Kings of Magadha.

[2] A fair specimen of this type may be seen in Plate II of this Journal, Vol. LXIII, 1894, Part I. It is a photo-etching of a statue excavated by Dr. G. A. Grierson near Rajgir, the ancient Rājagṛha. In the description given by Bābū Çarat Candra Dās on the authority of Lama Sherab Gya-tsho (p. 37) this attitude is called the *dhyāni āsana* which seems to be wrong. Also the tree above the head of Buddha is wrongly called the *Kalpavṛkṣa*. Other similar statues may be seen in Cunningham, Mahābōdhi, Plate XXIV, D, E, F, and Plate XXVI.

Māra's army are still represented, while on the majority of them no sign of Māra or his warriors is visible. Further it must be noticed that in Sarnath[1] and Ajanta,[2] wherever the attack of Māra is represented, Buddha's attitude is exactly the same as in those Bihar images above described. And this holds good also for Gandhara, where Buddha's attitude in the Māra scenes is always that of *bhûmisparça*, as called by me above.[3] This point again tends towards the same direction. For when Buddha was attacked by Māra, he was not yet a *Tathāgata* or a *Buddha*, he was only a Bōdhisattva, and wherever the scene is described in Buddhist Literature, he is spoken of by that term. Thus, here again, the right shoulder has been left uncovered, because the artist did not intend to represent the Divine Teacher after he had reached the perfect state of enlightenment, but merely in a preliminary stage, as a Bōdhisattva. The evidence, accordingly, derived from epigraphical as well as sculptural facts, tends to show that wherever we meet with a statue of Buddha which represents him with his right shoulder uncovered, we must consider this *a priori* as a sign indicating that the image is not meant for a Buddha, but for a Bōdhisattva.

But to return to the Inscription, we must now take into consideration the important statement as to the locality where the statue was set up. As we have seen already, the image was erected in *Çrāvastī* (spelled *Çāvasti*), in the *Kōsaṁbakuṭī*, "in the place where Buddha used to walk" (*Bhagavatō caṁkamē*). *Çrāvastī*, or in Pāli *Sāvatthi*, contained the *Jētavana*, a place on which Buddhists look with the same veneration as a Christian does on the house of Lazarus in Bethania. In this garden or park there were two buildings, as we learn from the famous medallion in the Bharhut Stūpa, labelled as: *Jētavana Anādhapēḍikō dēti kōṭisaṁthatēna kētā*, *i.e.*, 'Anāthapiṇḍaka gives the Jētavana (*to Buddha*), having purchased it[4] for a layer of kōṭis (*i.e.*, gold pieces)' (see Cunningham, Stūpa of Bharhut, Plates XXVIII and LVII). One of

1 See Plates 67, 68 of Dr. Burgess, Ancient Monuments, Part I.

2 There are two representations of Māra's attack on Buddha in Ajanta. One is a sculpture, figured in Plate LI of Burgess and Fergusson Cave Temples, the other the famous painting, a drawing of which may be seen, *e.g.*, on page 93, woodcut No. 31, of Grünwedel's Handbuch.

3 But on the specimens seen by me, about 3 or 4 in number, the right shoulder is covered. All of them are, however, very poor with respect to workmanship.

4 Dr. Hultzsch takes *kētā* as Pāli form of skt. *krētā*, but it is a gerund, corresponding to skt. *krītvā*; its prototype would be *krayitvā*, and it corresponds to *kiṇitvā* in the story of the Avidūrēnidāna (Fausböll, Jātaka, Vol. I, p. 92). I also do not agree with his translation of the words *Kōsaṁbakuṭī* as "the Hall at Kauçāmbī;" see his edition of the Bharhut Inscriptions No. 39, on page 230, Ind. Ant. Vol. XXI, for 1892.

those two buildings is described as *Kōsaṁbakuṭī*; it is the building mentioned in our Inscription, as has been recognized long ago by General Cunningham. The second building is called *gaṁdhakuṭī*, and is referred to directly in the tale of the Avidūrēnidāna (Jātaka, ed. Fausböll, Vol. I, p. 92), where we read that Sudatta (*i.e.*, Anāthapiṇḍika) erected this building in the centre of the park (*sō majjhē Dasabalassa gandhakuṭiṁ kārēsi*). Further it is stated in the same place, that he also erected 'places to walk, to sleep, and to stay during the day' for Buddha (*caṁkamaṇa-rattiṭṭhāna-divāṭṭhānāni ca*), one of which doubtless was the *Bhagavatō caṁkama*, where the statue was set up, according to the Inscription.

It thus is establised beyond doubt that *the statue originally was erected in Çrāvastī*, and the only point that remains for our discussion is the question whether we are entitled to identify the locality where the statue was discovered by General Cunningham in 1863, *i.e.*, the modern Set-Mahet with the site of the ancient Çrāvastī?

It has been done so by General Cunningham; see his account on Sahet-Mahet, or Çrāvastī, in Arch. Surv. Rep., Vol. I, p. 330 ff., and Vol. XI, p. 78 ff. This identification up to lately, seems to have been generally adopted, and is repeated by Dr. Führer in his List of Antiquarian Remains in the North-West Provinces and Oudh, p. 306. Recently, however, it appears to have come into discredit again. I refer to V. A. Smith's report on the Remains near Kasia in the Gorakhpur District (Allahabad, 1896) where in note 3, p. 4 he states: "I greatly doubt the correctness of the accepted identification of the site of Çrāvastī. I have a strong suspicion that Çrāvastī should be identified with Chārdā, or Chahārdah, in the Bahraich district, about forty miles north-west of Sēt-Mahēt (Sahēt-Mahēt). The latter place, which is commonly reputed to be the site of Çrāvastī, will probably prove to be Sētawya, which was situated eastward from Çrāvastī." It is for this reason that I take up the question here again.

It would be wrong to infer from a statement contained in the diary of the Journey of Hiouen Thsang, that the image discovered by General Cunningham is the same statue which the Chinese pilgrim saw in Çrāvastī. He tells us that (St. Julien, Hiouen Thsang, Vol. I, p. 296) "les bâtiments du *Kia-lan* (convent) sont complétement ruinés; il n'en reste que les antiques fondements. On ne voit plus qu'une petite maison en briques qui s'élève toute seule au milieu des décombres; *elle renferme une statue du Bouddha.*" Though this description closely agrees with the site where the General found the statue in 1863, yet from what immediately follows in Hiuen Thsang's account, we learn that the statue which he saw, was made of sandel-wood, while Cunningham's

statue is made of stone; and if we compare his account with the narrative of Fa-Hian (p. 75 of Beal's translation), it becomes evident that both refer to the same statue. This was recognized originally also by General Cunningham (see Arch. Surv. Rep., Vol. I, p. 340), but later on, he changed his opinion, and said (Arch. Surv. R., Vol. XI, p. 86): "When Hwen Thsang visited Srāvasti in A.D. 636, he found the Jetavana so completely ruined, that nothing more than the foundations remained. 'One small brick temple containing a statue of Buddha rose alone amid the ruins.' This solitary temple I have identified with No. 3,[1] because the Inscription which I found inside dates back to the early period of Indo-Scythian rule. *The statue must, therefore, have been enshrined in this temple several centuries before the time of Hwen Thsang; and as I found it inside the temple in* 1863, *it is certain that it must have been there in A.D.* 636, *when the Chinese pilgrim visited the Jetavana.*" This rather bold statement has been accepted without hesitation by Dr. Führer in his List of Antiquarian Remains, p. 310, where he says that "this very statue of colossal size, (*i.e.*, the statue seen by Hiuen Thsang) was found in 1863 by General Cunningham inside a small ruined brick temple." We may, of course, admit an error on Hiuen Thsang's side, but we have no reason whatever to do so. And, on the other hand, the fact that the statue does not seem to have been noticed by Hiuen Thsang, does not appear to me to value much. It may have been buried below the ground as early as in his time, and it may be owing merely to this fact that the statue has still been preserved to us in a country where stone material always, on account of its rarity, has been valued high and greatly demanded, while, on the other hand, further excavations conducted by General Cunningham and Dr. W. Hoey at the same site have been very resultless as to ancient sculptures or inscriptions.

While thus the accounts of the Chinese pilgrims become useless to us in deciding the question whether the image stood at Set-Mahet already at their time or not, we can, on the other hand, not derive an argument against the question at issue from the fact that the statue was made from the same material which was in use at the same time in Mathurā. For, as General Cunningham rightly observes (Arch. Surv. Rep., Vol. I, p. 339), "we know that the sculptor's art was in a very flourishing state at Mathurā during the first centuries of the Christian era" and the same fact holds also good for a number of other ancient sculptures that have come to light in the country around Mathurā. We are perfectly justified in putting all these sculptures,

[1] This refers to Plate XXV, same Volume.

which, by no means, all have been found in Mathurā itself, but some of them at a considerable distance away, together under the class-term of Mathurā sculptures, just as we speak of Gandhara-sculptures, and such a term rests on much stronger grounds than many a similar one introduced by Indian Archæologists. If, indeed, we find a statue with an Inscription, approximately 19 centuries old telling us that the place where the statue was set up, was Çrāvastī and their being no visible signs that the statue has been transported from some other place, such as Inscriptions in later characters, etc., we must primarily infer that the site where it stands is the same place as that mentioned in the Inscription, until by some independent reasons we have come to the conclusion that such an assumption cannot be upheld. Such independent reasons, in our case, would be the distance in miles and the direction according to the horizon, as recorded by the Chinese pilgrims between Çrāvastī and other places visited by them.

The next place to which both Fa-Hian and Hiuen Thsang travelled from Çrāvastī, is *Kapilavāstu*, the birth-place of Buddha. The latter place, by the discovery in 1896 of the famous Paḍeria Edict of Açōka, has been identified beyond doubt with a modern site in the Nepalese Terai to the north of Uska Bazar station. How far its distance from Set-Mahet in English miles is, I am unable to make out with certainty; its direction according to the horizon from Set-Mahet is to the East. The distance recorded by Fa-Hiang between Çrāvastī and Kapilavāstu is about 14 yojanas in a south-easterly direction;[1] Hiuen Thsang gives 500 li in a south-eastern direction as the distance between the kingdom of Çrāvastī and the kingdom of Kapilavāstu.[2] Both accordingly record the direction as lying to the south-east, while the actual direction between Set-Mahet and Paḍeria seems to be to the east. The question accordingly is: are we, on account of this discrepancy, justified in assuming that the statue has been brought to the place where General Cunningham found it, from somewhere else, while the actual site of Çrāvastī must be searched for somewhere to the north-east of Paḍeria?

[1] From Çrāvastī to Na-pi-ka, the birth-place of the Buddha Kraku chanda; 12 yōjanas to the south; from this place to Buddha Kanakamuni's birth-place (*viz.*, the modern Nigliva in Tahsil Taulehva, Nepal): less than 1 yōjana to the north: from this place to Kapilavāstu: less than one yōjana eastward; see Chapter XXI and XXII (p. 85-86) of Beal's translation.

[2] St. Julien, Vol. I, p. 309 "en partant de ce royaume (*i.e.*, *She-lo-fa-si-ti* = Çrāvastī), il fit environ cinq cents li au sud-est, et arriva au royaume de *Kie-pi-lo-fa-su-tu* (Kapilavastu)." I expect that the distance in *lis* and *yōjanas* agrees nearly with the actual distance in English miles between Set-Mahet and Paḍeria, but I have no means to work out this question, and I refrain myself, for this reason, from taking it into consideration. 500 *lis* or 14 *yōjanas* both come up approximately to 80 English miles.

To my humble opinion, such an assumption would be very difficult to maintain. Suppose, a pious Buddhist Monk or layman who had got hold of the statue at the place where it was standing previously, desired to make it a gift to some of his co-religionists who were then residing at the place which is now called Set-Mahet. For this purpose, he removed the statue, 11′ 8″ in height, and of a considerable weight some thirty or even fifty miles. Is it not then entirely in opposition to the usual custom in India that he took all this trouble and, in connexion with it, the considerable expenses upon himself without recording even his name on the statue? Çrāvastī in 636 A.D. when Hiuen Thsang visited the place, certainly was already very much devastated, and only few Buddhists were residing there. But it must have been absolutely depopulated and no one must have been there to claim the possession of the image which even on its size would have excited the religious veneration of an ordinary Hindu or Buddhist, if he was allowed to take the statue away, and nobody dared to object, as it has been done now-a-days hundred of times to Archæologists and Collectors of sculptures for the various Museums. And is it really in accordance with the usual custom in India that, whenever a religious man wants to gain merit by setting up a statue or building up a temple, he utilizes some old broken stone which he has come across with at some distant place? On the contrary, in such a case, no respect whatever for any object of antiquity is shown—a feeling which indeed is entirely new to the ordinary Indian—and the donor rather boasts himself of having made a new statue, however ugly, out of some other piece of venerable antiquity.

These considerations make me inclined to trust the authority of the Inscription on the statue discovered by General Cunningham and to look upon the discrepancy in the direction as recorded by the Chinese pilgrim as a minor point of no considerable importance. There is some more Epigraphical evidence as to the site of the ancient Çrāvastī which I may be permitted to add here, though, unfortunately, it does not help us any further. Çrāvastī is mentioned also in the following Inscriptions:—

(1) Madhuban Copper-plate Inscription of Harṣavardhana of Kanauj; date Harṣa-samvat 25=631–632 A.D.; Epigr. Indica, Vol. I, p. 72, line 8 ff. of Inscription: *Çrāvastī-bhuktau Kuṇḍadhānī-vaiṣayika-Sōmakuṇḍikā-grāma.* The plate was discovered in 1888 by a ploughman in a field near Madhuban, Pargana Nathūpur, Distr. A'ẓamgaṛh, N.-W. Provinces.

(2) Dighwa-Dubauli Copper-plate Inscription of Mahārāja

Mahēndrapāladēva; date [Harṣa]-samvat 155=761–762 A.D.; Ind. Ant., Vol. XV, 1886, p. 112; line 7 ff. of Inscription: *Çrāvastī-bhuktau Çrāvastī-maṇḍal-āntaḥpāti-Vālayikā-viṣaya-sambaddha-Pānīyaka-grāma.* The plate is in the possession of a Brahmin in the Saran District, Bihar, but seems to have been brought there from some distant place.

(3) Kaṭak Copper-plate Inscription of the third year of Mahārāja Bhavagupta II.; date 11th century A.D.; Epigr. Ind., Vol. III, p. 357; line 38 ff., of the Inscription mentions a Brahman who had come to Kaṭak from the bhaṭṭa-village Kāsīllī in the Çrāvastī-maṇḍala (*Çrāvastī-maṇḍalē Kāsīlli-bhaṭṭagrāma-vinirggatāya*).

All these localities, however, mentioned as lying in the *maṇḍala* or *bhukti* of Çrāvastī, I have been unable to identify; for that Vālayikā in the Dighwa-Dubauli Inscription (No. 2) may be the modern Ballia in the North-West Provinces, is nothing more than a mere guess. If it is possible to identify those places, they would certainly help to settle the question, but I am unable at present to do this.

To sum up the results of this paper, we learn from the Inscription on the base of the statue discovered by General Cunningham in 1863 at the modern Set-Mahet: —

(1) that **the statue** was erected in the last century B.C. or first century A.D., and consequently **is one of the oldest Buddhist images found in India;**

(2) that **it represents a Bōdhisattva, and not a Buddha**, this being recognisable also in the shape of the robe leaving the right shoulder naked;

(3) that, finally, **the statue originally was set up in Çrāvastī** and that the place where General Cunningham found it, *viz.*, **the modern Set-Mahet, has to be considered** on the authority of the Inscription **as the site of the ancient Çrāvastī,** notwithstanding a certain discrepancy in its actual direction from Kapilavāstu (Paḍeria), as compared with the direction recorded by the Chinese pilgrims Fa Hian and Hiuen Thsang.

A new Inscription of Mahārāja Bhōja I., from Marwar, dated Harṣa Samvat 100.—*By* Theodor Bloch, Ph. D.

[Read April, 1898].

This Inscription which is edited here for the first time, is engraved on a copper-plate discovered by Dēbīprasād, a Munsif of Jodhpur in Marwar State, Rajputana. It is stated to have come to light some fifty years ago during a heavy rainfall in a village called Sewa,[1] in Pargana Didwana[1] of the Marwar State, where it was lying buried under the earth, and whence it is said to have come to Daulatpur, in the same State; it is now deposited in the Darbar Hall of Jodhpur. I edit the Inscription from impressions kindly supplied to me by Dēbīprasād, Munsif of Jodhpur, who discovered the plate in Daulatpur and arranged for its being deposited in Jodhpur.

Judging from the impressions, the plate measures 1′ 9″ by 1′ 4½″; its weight is said to be 30 seers. It is inscribed on one side only in characters of exactly the same type as the two Inscriptions of the same dynasty, already known to us, *viz.*, the Dighwa-Dubauli Plate of Mahārāja Mahēndrapāla, and the Bengal Asiatic Society's Plate of Mahārāja Vināyakapāla.[2] The average size of the letters is ¼″. The seal, measuring, according to the impression, 9½″ by 6½″, is soldered unto the proper right side of the plate; it resembles in shape exactly the seal of the two other plates, mentioned above. It contains an Inscription, consisting of 10 lines of writing in relievo, above which there is, in an arch, the figure of a standing goddess, doubtless the Bhagavatī mentioned in the Inscription as tutelary deity of Mahārāja Bhōja. The same figure is also to be seen in the upper portion of the seal of the Dighwa-Dubauli and Bengal Asiatic Society's Plate. The latter which I had an opportunity to inspect, leaves no doubt that this goddess Bhagavatī is intended for Durgā or Pārvatī, as she is represented

[1] Written सेवा and دیدوانہ respectively, in the vernacular alphabets.

[2] Edited by Mr. Fleet in Indian Antiquary, Vol. XV, pp. 105 and 138, wit facsimile.

as holding a mirror and water-jar (*darpaṇa* and *kalaça*) in two of her left hands, both of which are among the attributes of this goddess.

The language of the Inscription is Sanskrit. With respect to orthography, the same peculiarities re-occur here, as in the Dighwa-Dubauli and Bengal Asiatic Society's Plates; *viz.*, the letter *b* is everywhere expressed by the sign for *v*; *paraṁbhagavatī* (or *parambha°*) stands for *paramabhagavatī* (in lines *e* and *k* of the seal, and lines 4 and 6 of the text); *samvatsrō*, in the date (line 16), is written for *samvatsarā* or *samvatsarāṇāṁ*; *ança* is written for *aṁça* (in lines 10 and 14).

The Inscription opens with the well-known Genealogical list of Mahārajas from *Dēvaçakti* down to *Bhōja*; the same pedigree, in exactly the same words, is repeated on the seal also, and may be seen, too, in the Dighwa-Dubauli and Bengal Asiatic Society's Plates of Mahēndrapāla and Vināyakapāla. Thereafter, we learn, that the *Mahārāja-Çrī-Bhōjadēva*, from his victorious camp, pitched up at *Mahōdaya* (line 1) issued a command to his officials in the village *Sivā*, belonging to the district (*viṣaya*) of *Dēṇḍrānaka*, which lay in the country of *Gurjjarattrā* (*Gurjjarattrā-bhūmau*; lines 6 foll.), informing them that a certain *Bhaṭṭa-Harṣuka* (line 8) had reported to him, that the above-named village (*viz.*, Sivā-grāma) had been granted by the present King Bhōja's great-grandfather, *Mahārāja Vatsarāja*, (line 9: *parama-dēva-pādānāṁ prapitāmaha, etc.,*) to his (*sc.* Harṣuka's) grandfather, *Bhaṭṭa Vāsudēva*. This Vāsudēva again by a special deed (*pratigraha-pattrēṇa*), had made over the sixth part of its revenues to a certain *Bhaṭṭa Viṣṇu* (line 10). Mahārāja Bhōja's grandfather, the *Mahārāja Nāgabhaṭa*, confirmed the original grant; but in the reign of the present King Bhōja (*dēva-rājyē*, line 11), both the original grant (*çāsana*) and the record of its being sanctioned by Nāgabhaṭa (*anumati*) had been lost. The Mahārāja Bhōja, therefore, after he had come to know about the grant, its sanction, and enjoyment, consented that the said village should be enjoyed by the Brahmans, the descendants of Bhaṭṭa-Vāsudēva, who belonged to the *Kāçyapa-gōttra* and were students of the *Āçvalāyana*-[*çākhā*] of the *Rg-vēda*, as well as by the Brahmans, the descendants of Bhaṭṭa Viṣṇu, who belonged to the *Kātyāyana-gōttra* and were students of the *Āçvalāyana*-[*çākhā*] of the *Ṛg-vēda*, in the same way as it had been enjoyed before, and as the divison of the shares had been already settled (*prāg-bhōga-kramēṇ=aiva yathāṁçam*, line 14). Then follows a çlōka (line 15 ff.) which tells us that the çāsana was drawn up[1] by *Prabhāsa*, and that

[1] This is the meaning of the word *prayukta* according to Prof. Bühler's suggestion; see Mr. Fleet's note 9, Ind. Ant., Vol. XV, p. 107. The translation of the first line of the verse accordingly would be: "(This is the writing) of the long-enduring çāsana, drawn up by Prabhāsa."

the *Yuvarāja Nāgabhaṭa* acted as *dūtaka*.[1] The date[2] of the assignment (*nibaddha*) of the grant is the year 100, the 13th day of the bright half of Phālguna. As in the case of the Dighwa-Dubauli and Bengal Asiatic Society's Plates, the date must be referred to the Harṣa Era, corresponding therefore to 706–707 A.D.

The new information which this Inscription furnishes regarding the history of this family of Mahārājas, is but scanty. It gives us the date Harṣa Samvat 100 (=A.D. 706-707) for Mahārāja Bhōja, and mentions the name of a Yuvarāja Nāgabhaṭa who has been left out in the later lists, apparently because he never ascended the throne. Of greater interest, however, are the localities mentioned in the Inscription. The village Sivā, the *agrahāra* of the Brahmin families descending from Bhaṭṭa-Vāsudēva and Bhaṭṭa-Viṣṇu, is described as lying in the *Gurjjarattrā-bhūmi*, in the *Dēṇḍvānaka-viṣaya*. The former I am unable to identify; but the latter apparently is identical with the modern Dīdwānā, the name of a town and pargana in Marwar State in Rajputana.[3] The place is shown in the map accompanying Webb's Currencies of Rajputana, and also on Plate 27 of Constable's Hand Atlas of India; it is situated midway between Jaypur and Bikanir. Accordingly, the village Sivā must be identical with the modern Sēwā, the place where, if tradition can be trusted, the plate came to light some fifty years ago. The villages granted in the two other Inscriptions of the same dynasty, lay respectively in the modern districts of Faizabad in Oudh, and of Benares; but we now learn that one part at least of the dominions of this family of petty chiefs (Mahārājas) lay also on the other bank of the Jumna, about 500 miles distant from their Zamīndārī in Oudh and 700 miles from Benares.

I now edit the Inscription from impressions supplied by Dēbīprasād:

Text.

The Seal:

(*a*) परमवैष्णवो महाराजश्रीदेवशक्ति-

(*b*) देवस्तस्य पुत्रस्तत्पादानुध्यातः श्रीभूयिका-

(*c*) देव्यामुत्पन्नः परममाहेश्वरो महाराज-

(*d*) श्रीवत्सराजदेवस्तस्य पुत्रस्तत्पादानुध्यातः

[1] For other instances of a *Yuvarāja* acting as *dūtaka*, *see* Khalimpur Plate of Dharmapāla (Epigr. Ind., Vol. III, p. 245), and Mungir Plate of Dēvapāla (Ind. Ant., Vol. XXI, p. 258).

[2] Expressed by a symbol, not in numerical figures.

[3] This has been already suggested to me by Dēbīprasād.

(*e*) श्रीसुन्दरीदेव्यामुत्पन्नः परंभगवतीभक्तो[1]

(*f*) महाराजश्रीनागभटदेवस्तस्य पुत्रस्त-

(*g*) त्पादानुध्यातः श्रीमदीसटादेव्यामुत्पन्नः पर-

(*h*) मादित्यभक्तो महाराजश्रीरामभद्रदेवस्त-

(*i*) स्य पुत्रस्तत्पादानुध्यातः श्रीमदप्पादेव्यामुत्पन्नः

(*k*) परंभगवतीभक्तो[1] महाराजश्रीभोजदेवः [॥*]

The Plate :

(1) ओं स्वस्ति [॥*] महोदयसमावासितानेकनौ[2]हस्त्यश्वरथपत्तिसम्पन्नस्कन्धा-
वारात्परमवैष्ण-

(2) वो महाराजश्रीदेवशक्तिदेवस्तस्य पुत्रस्तत्पादानुध्यातः श्रीभुयिकादेव्या-
मुत्पन्नः परम-

(3) माहेश्वरो महाराजश्रीवत्सराजदेवस्तस्य पुत्रस्तत्पादानुध्यातः श्रीसुन्दरी-
देव्यामुत्पन्नः

(4) परम्भगवतीभक्तो[3] महाराजश्रीनागभटदेवस्तस्य पुत्रस्तत्पादानुध्यातः श्री-
मदीसटादे-

(5) व्यामुत्पन्नः परमादित्यभक्तो महाराजश्रीरामभद्रदेवस्तस्य पुत्रस्तत्पादानु-
ध्यातः श्री-

(6) मदप्पादेव्यामुत्पन्नः परम्भगवतीभक्तो[3] महाराजश्रीभोजदेवः ॥ गुर्ज्जरत्रा-
भुमौ देवद्वान-

(7) कविषयसम्बद्ध[4]सिवाग्रामाग्रहारे समुपगतान्सर्व्वानेव यथास्थाननियुक्ता-
ग्प्रनिवासिनश्च

(8) समाज्ञापयति । भट्टहर्षुकेन विज्ञपितं । उपरिलिखिताग्रहारस्सर्व्वायस-
मेत आचन्द्रार्कं-

[1] Read परमभगवतो॰

[2] The reading नौ is quite obvious here as also in the Dighwa-Dubauli and Bengal Asiatic Society's Plates. Mr. Fleet's reading गो seems erroneous.

[3] Read परमभगवतो॰

[4] Read सम्बद्ध.

(9) क्षितिकालं पूर्व्वदत्तदेवब्रह्म[1]देयवर्ज्जितः परमदेवपादानां प्रपितामह-
महाराजश्रीवत्स-

(10) राजदेवेन मत्पितामहभट्टवासुदेवाय शासनेन दत्तो भुक्तश्च [।*] तेन
चास्य षष्ठान्शो[2] भट्टविष्णवे प्र-

(11) तिग्रहपत्त्रेण दत्तः [।*] पितामह महाराजश्रीनागभटदेवेनानुमति-
र्द्दत्ता [।*] देवराज्ये तु तच्छासनमनुम-

(12) तिश्च विगतिमुपगतेतदित्थं[3] विज्ञपितं शासनमनुमतिप्रतिग्रहपत्त्रं[4]
भोगश्च ज्ञात्वा मया पित्त्रोः पुण्याभि-

(13) वृद्धये काश्यपसगोत्त्राश्वलायनवह्वृचसब्रह्मचारि[5]भट्टवासुदेवान्वयजब्राह्म-
णानां[6] कात्यायनसगोत्त्राश्व-

(14) लायनवह्वृचसब्रह्मचारि[5]भट्टविष्णवन्वयजब्राह्मणानाञ्च[6] प्राग्भोगक्रमेणैव
यथान्शम[7]नुमोदित इति विदित्वा

(15) भवद्भिस्समनुमन्तव्यः [।*] प्रतिवासिभिरप्याज्ञाश्रवणविधेयैर्भूत्वा[8] सर्व्वा-
या एषां समुपनेया इति ॥
प्रभासेन[9] प्रयु[क्त]-

(16) स्य शासनस्य स्थिरायतेः ।
श्रीमान्नागभटो ना[म्ना] युवराजोत्र दूतकः ॥
सम्वत्स्रो[10] १००[11] फाल्गुनशुदि १०[11]३ निवद्धं[12] ॥

1 Read ब्रह्म.

2 Read षष्ठांशो.

3 Read ०गतेत्येतदित्थं.

4 This ought to be either अनुमतिप्रतिग्रहपत्रे or अनुमतिं प्रतिग्रहपत्रं.

5 Read ०बह्वृचसब्रह्मचारि.

6 Read ०ब्रह्मणानां.

7 Read यथांशम.

8 Read विधेयर्भूत्वा.

9 Metre Anuṣṭubh.

10 Read संवत्सरा or संवत्सराणां

11 Expressed by a symbol.

12 Read निबद्धं.

The Memoirs of Bāyazīd (Bajazet) Bīyāt.—*By* H. Beveridge, Esq., I.C.S. (retired).

[Read November, 1898.]

This work, which is still in manuscript, owes its origin to the Emperor Akbar. We learn from the introduction to the *Akbarnāma* that when Abū'l-faẓl undertook, under Akbar's orders, to write the history of the emperor's reign, considerable pains were taken to collect the necessary materials. Among other things inquiries were made among members of the royal family and old servants of the Court, and all who had knowledge of past events were directed to put their recollections into writing. It was in obedience to this order that Bāyazīd Bīyāt, who was then holding an office in Akbar's kitchen, dictated his memoirs to a clerk of Abū'l-faẓl. The same order produced the charming memoirs of Princess Gulbadan, Akbar's aunt, and apparently also those of Jauhar, the ewer-bearer. There is a copy of Bāyazīd's Memoirs in the India Office, MS. No. 216. This was Erskine's copy, and is the one which I have used for this article. Major Raverty had another copy which he quotes in his Notes on Afghānistān, but which, he informs me, is no longer in his possession. I hope that other copies may turn up, and also that some scholar will one day undertake the editing of the text. If any one undertake the task, he will do well to consult MS. Additional 26,610 of the British Museum. This is a nearly complete translation of the Memoirs by Mr. Erskine, and which might almost be printed as it stands.

Bāyazīd Bīyāt belonged to a Turkish tribe, but was a native of Persia and was brought up in Tabrīz. This appears from p. 77*b* where we are told that 'Alī Qulī Shaibānī (Khān Zamān) was a neighbour of Bāyazīd's in Tabrīz when he was little, and also from p. 102*a* where it is stated that Bāyazīd grew up with 'Alī Qulī in the Āwa quarter of Tabrīz. Bāyazīd was the younger brother of Shāh Bardī Bīyāt, the saint and poet, who forsook the profession of arms to become a water-carrier and whose tomb is at Bardwān.[1]

[1] See Professor Blochmann's article on Bahrām Saqqā, the name assumed by Shāh Bardī, in the J. A. S. B. for 1871, vol. 40, p. 281.

Bāyazīd dictated his memoirs at Lāhor in 999 (1590–91). He was then an old man, and though still in service,—he was Bakāwal Bēgī, or Steward of the kitchen,—he had had a paralytic stroke and was unable to write with his own hand. The facts that he was old and frail and that he had to dictate his recollections from memory account for their rambling character and for the inconsecutive style of the sentences. The Memoirs contain much valuable information, and in particular they give elaborate lists of Humāyūn's followers. They are also occasionally picturesque, as for instance, in the detailed account of the meeting between the two brothers, Humāyūn and Kāmrān, after the latter had been blinded, but as a whole they are badly written and less interesting than the memoirs of Jauhar. They are styled on the fly-leaf of the MS. *Tārīkh-i-Humāyūn*, but this title is not given by the author, who speaks of them only as a *mukhtaṣar* or abridgement, and it is not an adequate description of the contents, for the latter part of them is taken up with events of the reign of Akbar. They begin with Humāyūn's flight into Persia in 1543 and come down to the time of writing (1590–91). Abū'l-faẓl has evidently used them a good deal, though he nowhere expressly mentions them, and they are frequently quoted by Erskine in his valuable history of Humāyūn's reign. Bāyazīd tells us that nine contemporaneous copies of his book were made, two of which went into Abū'l-faẓl's library. I hope that some of them will be found one day in India. Bāyazīd's name occurs in the *Āīn* under the title of Bāyazīd Bēg Turkmān as a commander of three hundred (Blochmann's translation, p. 501), and his son Iftikhār is mentioned lower down (p. 516), as belonging to the class of commanders of two hundred.

The Memoirs begin with Humāyūn's arrival in Sīstān, and describe his journey to Harāt, and contain a copy of the elaborate despatch on which Shāh Ṭahmāsp gave directions to the governor of that city for Humāyūn's reception and entertainment. Bāyazīd, however, did not meet with Humāyūn, till the latter had joined the king of Persia at Zangān, and had gone hunting with him at Solomon's Throne (*Takht-i-Sulaimān*), south of the Caspian. After mentioning (at p. 11*b*) his own presence at the feasts and hunts, Bāyazīd tells us that when Humāyūn took leave of Shāh Ṭahmāsp and proceeded towards Tabrīz, he himself was in the service of His Holiness Saiyid Muḥammad 'Arab, the Shāh's *Imām* or chaplain, who had been entrusted that year with the conveyance of the royal donative to the shrine of Imām Riẓā at Mashhad. Apparently when Humāyūn went westward, Bāyazīd proceeded on the opposite direction towards Mashhad, for he was there

with his father when Humāyūn arrived on the first Shawwāl 951, (16th December, 1544). It was the day of the *'Īdu-l-fiṭr* or the breaking of the fast of the Ramaẓān, but the weather had been so bad from rain and snow that the people of Mashhad had not been able to see the moon. Humāyūn, however, was able to satisfy the Qāẓī that he had seen the moon when crossing the Zaqī[1] Pass on the previous evening and so after 9 A.M. all the inhabitants proceeded to the 'Īdgāh. Humāyūn stayed several days in Mashhad, putting up in an upper room (*bālākhāna*) behind Imām Riẓā's dome. One night he circumambulated the shrine and visited the tombs of the poet Mīr 'Alī Shēr and others, and in his zeal insisted upon acting as a servant of the shrine and on snuffing the lamps. This incident is also mentioned by Jauhar, (Stewart's translation, p. 60), but is referred by him to Humāyūn's first visit to Mashhad. Perhaps Humāyūn performed the ceremony twice. From Mashhad Humāyūn proceeded towards Afghānistān, and joined the Persian army on the banks of the Hilmand. He sent a force to take the castle of Bast, on the Hilmand near the junction of the Arghandāb, and Bāyazīd went with it, though apparently not in any official capacity. From Bast, Humāyūn went to Qandahār and besieged it for some months. Bāyazīd was here also, and accompanied Bairām Khān on his embassy to Kābul. On the way they were attacked by the Hazāras, and Bāyazīd records the feat of Muḥammadī Mīrzā, a grandson of Jahān Shāh, the last king of the Turkmāns of the Black Sheep. Muḥammadī was on a horse which had been sent by Ṭahmāsp as a present to Sulaimān, the ruler of Badakhshān, and he leapt with it a ditch which was eighteen cubits wide, in order to attack a Hazāra archer who had wounded several of the king's troopers. He killed him, but not before the archer had discharged his arrow and wounded the horse on the chest. Notwithstanding the wound, the horse carried Muḥammadī for ten miles further and then dropped. Here Bāyazīd incidentally mentions that the famous Bairām Khān, whom he styles Baharlū, claimed to be descended from the same family as Muḥammadī. At Kābul, Bāyazīd saw the child Akbar, who was then living with his grand-aunt Khānzāda Bēgam, and heard Māham Bēgha say, that he was born in 949 (the 946 of text must be a mistake), that he was then $3\frac{1}{2}$ years old, and that this date had also been written up in Kābul by his Majesty Humāyūn.

The embassy returned to Qandahār after about two months, and apparently Bāyazīd did not return with it, but joined his brother

[1] I cannot find this name on the map, though there is a place Zarkī marked N. of Mashhad. Probably the pass was to the west of Mashhad on the way from Nīshāpūr.

Bahrām Saqqā who had not then become a darvesh and was in Gardīz, 65 miles S.-E. Kābul, in the service of Mīrzā Kāmrān. Later on, p. 19*a*, Bāyazīd tells us that Kāmrān took Gardīz, Naghaz, and Bangash from his brother Shāh Bardī and gave them to Khiẓr Khān Hazāra with instructions to guard the line of march from Qandahār and Ghaznī. Shāh Bardī *alias* Bahrām Saqqā received in exchange the districts of Ghūrband (N.-W. Kābul), Ẓohāk and Bāmīān, but when he came to pay his respects to Kāmrān on his way thither, Kāmrān requested him to put off his journey to Ghūrband till the affairs of the army had been settled. So Bahrām and his brother Bāyazīd stayed at Kābul till Kāmrān had reviewed his troops and till the arrival of Humāyūn. This was followed by the desertion of all Kāmrān's officers. Shāh Bardī was one of them and joined Humāyūn along with the famous Bāpūs Bēg and with Bāyazīd. Humāyūn entered Kābul on the 10th Ramaẓān[1] 952, (16th November, 1545), and had the pleasure of meeting again his wives and sisters, and his little son Akbar. Bāyazīd records that Muayyid Bēg Dūldai Barlās died only a week after the taking of Kābul, and that this was the cause of universal joy, every body saying that he was the Satan of mankind, and was the cause of Humāyūn's losing India, and that now there was hope that Humāyūn would recover that country. This is the same Muayyid who was so brutal as to cut off the hands of about 2,000 men who formed the garrison of Cunār and had capitulated.[2] Bāyazīd is charitable enough to express the hope that Munkir and Nakīr, the two angels who question the departed, may not have been so severe on Muayyid as were his fellow-men. In the spring of 1546, Maryam-makānī, Akbar's mother, arrived from Qandahār and the circumcision of Akbar, then between four and five years old, was celebrated in March of that year with great splendour, the city being illuminated, &c. for forty days. It was on the occasion of this *āīnbandī* or festival that Bāyazīd's brother, Shāh Bardī, came under a spell,[3] or was drawn to religion so forcibly that he gave up his profession of a soldier and became a water-carrier under the

1 There is, as Erskine observes, Hist. II. 325, a discrepancy about this date, but he seems wrong in saying that Bāyazīd gives the year as 953. His own copy has 952; and that this is correct appears from the statement on p. 224, that the festivities at Kābul took place in the beginning of 953.

2 The statement that Muayyid was the cause of Humāyūn's losing India is corroborated by Jauhar, (pp. 15 and 16 of Stewart), who says that it was owing to Muayyid's advice that Humāyūn crossed to the south-west of the Ganges, a step which led to the disaster of Causā.

3 Memoirs p. 19*a* *jaẓaba rasīda* lit., an attraction or drawing occurred. There is another reference to this brother at p. 98*a*.

name of Bahrām Saqqā. His brother adds that he composed a *dīwān* or collection of poems which has been acceptable to all, both the elect and the general public, and that he went off to Turkistān, reciting, or making a rosary of (*tasbīḥ numūda*[1]) the Persian *dīwān* of Shāh Qāsim Anwar,[2] and the Turkī *dīwān* of Shāh Nasīmī.[3] We shall hear of him again as a water-carrier in the streets of Agra.

After some days of feasting the royal party went to visit Khwāja Rēg-rawān, the site of the moving sand, and there the princes engaged in wrestling-bouts. Humāyūn wrestled with Imām Qulī Qūrcī, and Mīrzā Hindāl with his cousin Mīrzā Yādgār Nāṣir. After that they went to Khwāja Sih Yārān, the Place of the Three Friends (Jarrett's Āīn II, 409 *n*), to admire the arghawān tree blossoms of the Dāman-i-kōh. About this time Caghatāī Sulṭān who was a Mughul prince of great promise and an universal favourite died, and one Mīr Amānī made a pretty chronogram about him. After describing him as a rose and saying that in the season of the rose he meditated a journey, the verses wind up thus :—

"I sought the date from the bereaved nightingale and she said weeping, the rose has gone out of the garden" (*gul az bāgh bīrūn shud*). Here if we take 50, the numerical value of *gul*, from 1003, the value of *bāgh*, we get the date 953.[4] With this, Bāyazīd ends the first chapter of his memoirs.

The next opens with an account of the trial and execution of Mīrzā Yādgār Nāṣir which took place in the end of 953, (January 1547). It seems that a regular indictment was preferred, consisting of nearly thirty articles. One of them went as far back as the taking of Cāmpānīr in 1535 and was as follows :—"On the taking of the Fort of Cāmpānīr we (Humāyūn) had come into the treasury and had commanded that no one, unless sent for, should come to the treasury-door, but you came without orders and sent your respects through a *bakāwal* (Steward) who had brought us a special dish of soup. We left coins of all sorts on the tray and sent soup to you, and you had

1 Perhaps *tasbī'* making a seven fold copy.

2 A native of Tabrīz which may account for Bahrām's attachment to his poetry. He was a mystic poet and died 837 A.H. or 1434 near Harāt. There is a good account of him in Beale's Oriental Dictionary, but the date of his death there given seems wrong.

3 See Professor Browne on the Ḥanafī sect in J. R. A. S., January, 1898, pp. 62 and 67. Nasīmī was put to death for heterodoxy at Aleppo in 820 (1417). Nasīm is a district near Baghdād. The poet's real name was Saiyid 'Imādu-d-dīn. See Rieu's Catalogue of Turkish MSS. 165a.

4 Badāōnī has a similar chronogram on the death of Bairām. Lowe's translation, p. 41.

the audacity to lift off a *Muzaffarī* (a silver coin) from it and to make over the tray[1] and all its contents to the *bakāwal*. This was disrespect according to the imperial constitutions (*ṭūra*)." Another was of a more serious nature, *viz.*, that he had conspired with Shāh Ḥusain of Sind against Humāyūn, and that so Humāyūn had been driven to take refuge in Persia. Yādgār Nāṣir was found guilty and Muḥammad 'Alī Taghāī (apparently Humāyūn's mother's brother), the governor of Kābul, was ordered to put him to death. But he refused, saying that he had never killed a sparrow, how then could he kill Prince Yādgār Nāṣir. Mun'im Bēg suggested the employment of Muḥammad Qāsim Manjī, and he the same night had the Mīrzā strangled with a bow-string. Yādgār was buried in front of the citadel gate, but his body was afterwards exhumed and interred beside his father in Ghaznī. Some time after this, Humāyūn, we are told, had a drinking party and when he got up was so unsteady that his foot slipped. His butler expressed sorrow that his master should take anything that could reduce him to such a state, and Humāyūn accepting the rebuke, vowed that he would never touch intoxicating drinks again. We are told that he kept his vow for the rest of his life. He also sent for the grave seigniors who had been his boon companions and told them that it should not have been left to his butler to warn him against evil courses. He now resolved to go to Badakhshān in order to coerce Mīrzā Sulaimān who had failed to present himself at Kābul. On the way he punished some men who had offended him. One of them, Mastī Firāq, he ordered to be thrown under the feet of an elephant. The man cried out that he had the holy Koran under his arm, and that they should first take this away in order that it might not be damaged. Search having been made, it was found under his armpit, and his piety was rewarded by a pardon. In Badakhshān Humāyūn fell dangerously ill and when he recovered found that Kāmrān had taken advantage of his illness to resume possession of Kabul. Humāyūn hurried back and succeeded in driving out Kāmrān for the second time. The latter fled to the north and was afterwards besieged in Tālīqān (in Badakhshān) by Humāyūn. After a while he had to surrender and applied to his brother for leave to go to Mecca. Humāyūn was, however, too soft-hearted to insist on such an abdication and so recalled Kāmrān after he had gone a little way on his journey, and had an interview with him at Tālīqān. Bāyazīd gives a full and curious account of the ceremonies with which Kāmrān was

1 Probably the tray (*khwān*) here meant is that containing the food or soup, and the insolence consisted in the rejection of what the king had sent, and n making over the coins to a servant.

received, and describes the entertainment which followed. There is also a description of this meeting in Princess Gulbadan's Memoirs. One story which Bāyazīd tells is about a conversation during the festival between Ḥusain Qulī Sulṭān, the keeper of the seal, and Kāmrān. There was various discourse, he says, and Ḥusain Qulī told Kāmrān it was reported that at a meeting held by 'Ubaidu-l-lāh Khān, the question had been put whether a man who had not in his heart hatred to 'Alī as big as an orange, could be called a Musulmān; that afterwards this subject had been brought up again in a meeting at which Kāmrān was present and that Kāmrān was reported to have remarked that it behoved a servant of God to have such a hatred as big as a pumpkin. Kāmrān was indignant at Ḥusain Qulī's remarks and asked him if he took him for a heretic. To this the other replied that he was only repeating what he had heard, and that the recital of an infidel's language did not make the repeater an infidel. As the Uzbaks were strong Sunnīs it is not unlikely that the question was really put, and as Kāmrān was a Sunnī or at least was desirous of pleasing the Sunnīs and had married into an Uzbak family it is likely enough that he improved upon the question in the manner stated. This story is one of those which Abū'l-faẓl has borrowed from Bāyazīd.[1]

The entertainment lasted for three days and was followed by a council meeting in which the propriety of making an attack on Balkh was discussed. It does not appear that Kāmrān was present at this council, or that he was invited to express his opinion about the expedition. Very probably he was not asked for he himself had been a supplicant to the ruler of Balkh and had obtained some assistance from him in his contests with his brother.

It is suggested by Erskine that the help which the Uzbak chief had given to Kāmrān was one of the motives for the attack on Balkh. There was considerable difference of opinion among the councillors, and in the end it was resolved that they should all march south to Nāran where the roads to Balkh and Kābul separated and that they should there decide what they should do. On the way Humāyūn turned off to visit the fountain of Band Kushā near Ishkamish (in Badakhshān and E.-S.-E. of Kundūz. On the map there is a place marked Cashma (spring or of fountain) about 7 miles N. E. of Ishkamish). There he sent for the blacksmiths and bade them prepare an iron pen, saying that when his Majesty his father Bābar returned

[1] It is also told by Shāh Ṭahmāsp in his Memoirs. See Tenfel's paper in Z. D. M. G. and Paul Horn's trs. Strassburg 1892, p. 37. But Mr. Horn has erroneously made the orange a pomegranate. See Text, Z. D. M. G., Vol. 46, p. 598.

from Samarqand, he had written the date and the number of his companions, and that it was proper he should make a similar record. So he engraved the date, &c., with his own blessed hand. Abū'l-faẓl [1] also tells this story, (*Akbarnāma* I, 282), and says that the occasion of Bābar's putting up the inscription was the submission to him of his brothers, Khān Mirzā and Jahāngīr. It was, he says, in accordance with this precedent that Humāyūn engraved the inscription, for his brothers, Kāmrān and 'Askarī, had just been reconciled to him and performed homage. But I have been unable to find the passage in Bābar's Memoirs. At p. 101 of these Memoirs Bābar records the cutting of an inscription near a spring, but this was in the neighbourhood of Farghāna, and again at p. 233 there is a reference to the cutting of an inscription, but this too is not the Ishkamish one. If Abū'l-faẓl's statement is correct, he must, I think, have got it from some other source than the Memoirs.

It does not appear that there was any fresh discussion at Nāran about going to Balkh, it having already been decided apparently that the expedition should not take place that year. At Nāran therefore the brothers separated, and Kāmrān received Kūlāb as his fief. Humāyūn went on to Parīān where he repaired the fort constructed by his ancestor Tīmūr. From Parīān he paid a visit to some silver mines. He sent for miners and had an experimental working made but found that the produce would not repay the cost of excavation. After this he resumed his march to Kābul, and on coming to the Ushtarkarām (?) pass he lost his way. The servants who were ahead went to find out the road but could not. At last a man was seen going along on foot. He was hailed and asked his name (p. 41*b*). "A servant of God," he replied. "We are all servants of God," rejoined Humāyūn, "tell us your real name." My name is "Khāk" (earth), replied the man. Humāyūn on this said, "What is your proper name? what sense is there in the word *khāk*?" He then replied, "Then call me what you like." Humāyūn who had been already put out by losing his road, now got very angry and said, "Shall I call you a kite or a muck-rake (*Gūh dalāl*)?" "During the five or six years," says Bāyazīd, "that I had been in attendance on him, I had never seen him so put out before." After this colloquy the man became their guide and brought them to the village of Ushtarkarām. Humāyūn spent the following winter in Kābul and then set out early in the spring of 1549 on the expedition against Balkh.

[1] The visit of the four brothers to the fountains is also mentioned by Jauhar, Stewart, p. 92.

It is strange what a fascination Central Asia seems to have possessed for Bābar and his descendants. We find Bābar spending the best years of his life in fruitless attempts to regain possession of Farghāna and to establish himself in Samarqand, and now we find his sons engaged in the same bootless warfare, and neglecting the far more promising field of India. A war against the Uzbaks seems to have been to this family what a campaign against the Persians was to the Greeks, or a crusade to the European nations in the Middle Ages. Humāyūn made his attack in company with his brother Hindāl and his cousin Sulaimān. Kāmrān and 'Askarī sent word that they would come, but they failed to put in an appearance. Kāmrān indeed took advantage of Humāyūn's absence on this expedition to capture Kābul for the second time.

We are told by Bāyazīd, (p. 94*b*), that Sulaimān of Badakhshān fought 72 battles with the Uzbaks, and was always successful, but if so he was the only Timūride who ever got the better of them. And he too eventually found that the Uzbaks were too strong for him, for he lost his son Mīrzā Ibrāhīm, who was made prisoner by the Uzbaks in one of his father's expeditions and was taken to Balkh and put to death there. And Sulaimān himself was eventually driven out of Badakhshān in his old age and forced to take refuge with Akbar. Where Bābar had failed, even with the powerful help of the king of Persia, it was not likely that his unstable son Humāyūn should succeed. His campaign against Balkh ended in disastrous failure, and his sufferings during the retreat remind us of those experienced by his father when he fled from Samarqand after having been driven out by Shaibānī Khān. Bāyazīd was present in the campaign and was now a direct servant of Humāyūn, having begun his career as a servant of Jalālu-d-dīn Maḥmūd of Aubāh, the king's butler, and having afterwards served Ḥusain Qulī, the keeper of the seal.

As Humāyūn was marching towards Aibak, one of his followers shot a leopard. The seal-bearer remarked that this was a bad omen, and cited the instance of the Uzbaks who on account of a similar occurrence had once put off an expedition to Khurāsān. But Humāyūn got over the argument by observing that the Uzbaks were his enemies and that so what was a bad sign for them was a good one for him. Aibak was taken after a short resistance and Khwāja Bāgh, the guardian of Pīr Muḥammad, the ruler of Balkh, was made prisoner. Humāyūn took the singular step of asking the Khwāja how he should proceed in order to be successful in his expedition against Balkh. The Khwāja naturally replied that he was an enemy and so his opinion should not be taken, but Humāyūn persisted, saying, that the Uzbaks were honest men and

would tell the truth, and that the Khwāja was the most honest of his countrymen. On this Khwāja Bāgh gave him the disinterested advice to cut off the heads of all his prisoners including himself. Humāyūn's answer was that they were all Musulmāns and that he could not put to death so many of his co-religionists. The Khwāja then proposed a treaty with Pīr Muḥammad, but Humāyūn also rejected this suggestion. He then continued his march *viâ* Khulm to Balkh. At first his enterprise seemed likely to be successful, but his soldiers got discouraged by the continued absence of Kāmrān and apprehended that Kāmrān would attack Kābul in their absence, and get possession of their families who had been left behind in that city. So when victory was apparently within their grasp the invaders retreated southwards to Dera Gaz. The attempt to execute a change of position in the face of an enemy had the same disastrous effect that followed a similar manœuvre before the battle of Qanauj. The retreat became a flight, and Humāyūn had much difficulty in effecting his escape. The hardships he encountered on the way back to Kābul are minutely described by Bāyazīd, but he has not the descriptive power of Bābar or even of Jauhar, and he seems too anxious to magnify his own performances. As Erskine remarks in his MS. translation, (p. 47), Bāyazīd is much the hero of his own tale. One extract, p. 49*b*, may however be given.

"When we came to the foot of the Sih Paj Pass, which is one of the passes in the Hindū Kush, his Majesty halted and said that for some days he had not slept. He then laid his blessed head on Mādar[1] Sulṭān's knees and told him to sing him to sleep by repeating anything he knew. Mādar begged that Bāyazīd might be ordered to join his voice, and Bāyazīd did so. As his Majesty had represented that he was hungry, Bāyazīd endeavoured to get him some food. There was a shield which had been cast aside as out of repair. It had a steel boss and Bāyazīd made ready on it some horse-flesh and a stew and presented it to his Majesty when he awoke. He partook of it and often said afterwards in Kābul that he had never eaten anything so delicious as that dish (*āsh*)." Humāyūn returned to Kābul on 1st Ramaẓān, 956, (23rd September, 1549), in time to save the city from being taken by Kāmrān. With this event Bāyazīd concludes the second chapter of his Memoirs.

The third chapter begins with an account of the defeat of Humāyūn by Kāmrān in the Qipcāq Valley. Humāyūn was wounded in this engagement and had to retire to the hills, while Kāmrān followed

[1] Erskine renders this "mother of Sulṭān," but it is hardly likely that any women were with the party.

up his success by taking Kābul which now fell into his possession for the third time.

The next event recorded is the negotiation for Humāyūn's marriage with Shāhzāda Khānam, the daughter of Mīrzā Sulaimān of Badakhshān. The story is told at wearisome length, the only interest in it being the revelation of the haughty and masterful character of Ḥaram (or Khānam) Bēgam, the wife of Sulaimān. She was indignant that persons of such inferior rank as Khwāja Jalālu-d-din and Bībī Fāṭima should be sent to demand the hand of her daughter, and tauntingly told Fāṭima that her business in Kābul was the enticing away of men's daughters. "Did you think of getting my daughter in that way?" she said. "Why has none of the Bēgams or Āghācas come; if my daughter's name is not great, the reputation of his Majesty the king is great." Ḥaram became mollified after a while and sent a message to Humāyūn that she would be proud to give him her daughter if he came for her. Presumably the marriage never took place for we hear no more of it, and the fact that Ḥaram's son Ibrāhīm was afterwards married to Humāyūn's daughter, Bakhshī Bānū, would surely prevent a marriage between Humāyūn and Ibrāhīm's sister. Ḥaram in her message to Humāyūn spoke of his traversing the defiles of the Hindū Kush and this leads Bāyazīd to observe (p. 59*a*) that the name of these mountains was changed to Hindū Kōh by Akbar in 994, (1586), because he perceived that the range extended from the limits of Bengal to the borders of Tabrīz, and because the shrines of Tabrīz saints are to be found on its slopes.[1]

After this comes the account of the night attack by Kāmrān on Humāyūn's camp and the death of Mīrzā Hindāl. Bāyazīd records the cynical remark made by Mun'im Khān upon this event. Coming up to Humāyūn, he inquired why he was weeping. "Because I have heard that Mīrzā Hindāl has been martyred," replied Humāyūn. "You lament your own good," said Mun'im, "you have one enemy less." Upon this his Majesty stinted his tears. Hindāl's death took place in 958, (1551), and the word "*Shabkhūn*," (night attack) gives the chronogram. Here Bāyazīd digresses to tell a story about Akbar, belonging to this year. The young prince was having his lessons with the son of Mullā Ḥisāmu-d-dīn, a famous doctor of Samarqand, in a tent in his mother's

1 Bāyazīd adds a "God knows," to this rather unintelligible explanation. There are Tombs of Tabrīz Saints in India, *e. g.*, of Jalālu-d-din at Pandūa, in the Maldā district. Akbar may have thought of him because his own name was Jalālu-d-dīn and may have thought that by calling the range Hindū-Kōh he was grounding a claim to it. At all events, this fact that he invented the name Hindū-kōh is interesting.

garden. Mun'im came there to pay his respects, and the child put up his foster-brother, Adham Kōka to ask for a holiday. Mun'im made the desired request to the teacher, and as he was then prime minister and all-powerful, the tutor at once gave Akbar his liberty. This came to Humāyūn's ears and next day when Shamsu-d-dīn Atka brought Akbar to salute his father, Humāyūn observed to the child, "Yesterday you got Ḥājī Muḥammad Sulṭān to ask your teacher to set you free, do not such a thing again." When the prince had gone back to his school, Humāyūn turned to Mun'im Khān and said "I heard that you got him the holiday, but I mentioned the name of Ḥājī Muḥammad to my son because he is yet young and possibly it might remain in his heart 'Mun'im Khān got me a holiday, and then told the king' and this might lead to your harm some day when I am no longer here. As for Ḥājī Muḥammad, he is a man without any decency and so deserves any harm that may come to him."

Bāyazīd adds that he heard this story in Jaunpūr in 978 (1570–71) when Mun'im Khān was Khān-khānān.

Bāyazīd describes the blinding of Kāmrān but he was not present on the occasion and his narrative is by no means so detailed as that of Jauhar. He, however, gives a most affecting description of the interview between the two brothers afterwards when they met at midnight, and the blind Kāmrān was led out as far as the tent-ropes to meet Humāyūn. But it has been so well translated in Erskine's History (II, 416), that it is unnecessary to repeat the account. I shall only remark that what Kāmrān said to the bystanders after acknowledging that his misfortunes were due to his own fault is somewhat different in Bāyazīd from Mr. Erskine's rendering. According to the latter, Kāmrān said, "If it be known that his Majesty has shown favour to me, let it also be known how little I have deserved it." Apparently what Kāmrān said was, (Bāyazīd 64*b*) "If people consider that his Majesty has dealt kindly by me, I attest the fact." (*man sijil kardam*). Mun'im Khān was now appointed guardian of Akbar. He took him to Jūī Shāhī, which is the old name of Jalālābād. The Jalālābād fort was built by Mun'im Khān and received its name in compliment to Akbar, (one of whose names was Jalālu-d-dīn), and who got Jūī Shahī as his appanage in succession to his uncle Hindāl, whose daughter also he married. Bāyazīd gives the chronogram of the building of Jalālābād, which also served, with the addition of one letter, for the date of the building of the Jaunpūr bridge ten years later. One Qāsim Arslān was the composer of the chronograms but they do not seem to be correctly given in the MS. Apparently they should run *Bānīy-i-ō ān Mun'im Khān*, and *Bānīy-i-ō īn Mun'im Khān* which would give respectively 972 and 982.

Bāyazīd was now in the service of Jalālu-d-dīn Maḥmūd of Aubah, as his *sāmān* or butler and he relates how Jalālu-d-dīn sent him from Kābul to Jalālābād with a quantity of ice, grapes, *riwāj*, lemonade and sugar-candy, as a present to Akbar. In spite of the heat of Jalālābād, he says, the ice arrived intact as the box had bran in it and was wrapt in felt. Akbar was highly delighted with the ice, ate a portion, and had some put into his water bottle, and also distributed it to his officers. He then questioned Bāyazīd about public affairs. Bāyazīd had brought a letter from Jalālu-d-dīn in which he asked where Akbar would take up his quarters when he came to Kābul. Akbar asked Bāyazīd what season it was in Kābul, and when he replied that the white roses were in bloom in the Shāh Ārāī garden, Akbar ordered that his dinner should be prepared in that place. Afterwards Akbar proceeded to the Bāgh Wafā at Adānīpur, which was a famous garden made by his grandfather, and again questioned Bāyazīd about public affairs, and about Balkh and Samarqand. He wrote a reply to Jalālu-d-dīn and Bāyazīd went off in the evening with it to Kābul. He travelled with great expedition for he arrived next day on the Shab-i-barāt, (6th August, 1552), before the people had lighted up for the festival. This was good going as the distance (from Adānīpur) is about 180 miles and he tells us that old soldiers were astonished at his coming so quickly. He was alone too, and the roads were bad. He now gives a cook's chronicle of how he prepared dinner for Akbar in the Awarta Bāgh (? middle garden) and how Akbar arrived next day at noon and was regaled by him with pheasants' wings (*qūl-i-qairgha*) and how the prince sent the remainder of the birds to the Bēgams.

At p. 69*b*. Bāyazīd incidentally mentions that Mun'im Khān's father, Mīram Bēg, was guardian of Mīrzā 'Askarī, and had charge of Qandahār, and that on the occasion of an attack by the Hazāras he sacrificed his own life in order to let the prince escape. This is a valuable supplement to Blochmann's account of Mun'im Khān which says (p. 317) that nothing appears to be known of the circumstances of Mun'im's father, Miram (or Bairām) Bēg.

At p. 72*a* we have it recorded that in the spring of 960, (1553), two sons were born to Humāyūn in one month. One was Muḥammad Ḥakim, who was afterwards ruler of Kābul, and whose mother was Cūcak Bēgam, and the other was Muḥammad Farkh Fāl whose mother was Khānish, the daughter of Cacaq Mīrzā of Khwārizm, but who only survived for a few days.

The fourth chapter of the Memoirs commences with a very full list of the officers who accompanied Humāyūn, Akbar, and Bairām to India.

From p. 77*b* we learn that Bāyazīd left without notice the service of Khwāja Jalālu-d-dīn on account of some injury which he received from the Khwāja's brother. He went to Bangash where 'Alī Qulī Shaibānī was, whom he had known in his childhood at Tabrīz, but eventually he proceeded to Kābul and became the servant of Mun'im Khān. The brother of the Khwāja here referred to was Jalālu-d-dīn Mas'ūd who was afterwards put to death along with his elder brother,[1] by Mun'im Khān. See *Ma'āṣiru-l-umarā* I. 617.

For several pages after this the Memoirs are occupied with an account of the siege of Kābul by Sulaimān Mīrzā of Badakhshān, and his son Ibrāhīm. It seems that on Humāyūn's death Sulaimān considered that as the oldest member of the great Tīmūr's family he was entitled to a share in Humāyūn's dominions. Bāyazīd, according to his own account, took a prominent part in repelling the attack, and was wounded by an arrow. Sulaimān did not take the town, but a compromise was made whereby his *Imām* was allowed to read the *khuṭba* in his name for one day in Kābul.[2]

At p. 87*b* we are told that Mun'im Khān came out of Kābul as soon as the siege was over and proceeded towards Bāgh-dīh-afghānān. On the way—in front of the royal baths—he met Khwāja Mīrakī, the *dīwān* of Maryam-makānī, who had stayed outside during the siege and had sided with Mīrzā Sulaimān. Mun'im at once had him pulled off his horse and hanged at the door (*īshak*) of a costermonger's shop. The interest of this entry lies in the fact that Khwāja Mīrakī was the grandfather of Niẓāmu-d-dīn the historian.

P. 88*a* tells that Sulṭān 'Ādilī, the successor of Sikandar, died near Allāhābād, and that the famous Hēmū vowed to God that if he defeated the Mughuls he would become a Musulmān. On the next page Bāyazīd expresses his satisfaction that God erased from the infidel's heart the recollection of this vow after he had defeated Tardī Bēg. As the glory of Tīmūr, he says, had descended to Humāyūn, and then been transferred to Akbar, God, on the field of Pānīpat, put forgetfulness of his vow into Hēmū's heart. The same page describes how Bairām Khān put Tardī Bēg to death. He had an old grudge against him, and used his defeat by Hēmū as a pretext for assassinating him. He sent for him, we are told, to his own house, then left the room on pretence of a necessary purpose, and sent in men who put Tardī Bēg to death on the carpeted floor of the *dīwānkhāna*. A few pages further on (92*a*) we are told that the reason for Bairām's dislike of Tardī Bēg

[1] Blochmann calls him the son of Jalālu-d-dīn Maḥmūd, 384.

[2] The account by Niẓāmu-d-dīn, Elliot V, 249, may be compared with this.

was that when they were in India together before Humāyūn's expulsion, Bairām, then only Bairām Bēg and the *Muhrdār* (seal-keeper), had wanted to sit on the same carpet (*zūlca*) with Tardī Bēg who was at that time governor of Etāwā, and that the latter had refused to make room for him.

Hēmū's head was sent to Mun'im Khān in Afghānistān (at Qūruqsāī) and he sent it on to Bāyazīd at Kābul with instructions to place it over the Iron Gate, and to have the drums of rejoicing beaten. It was 3 or 4 hours of the night when the head arrived and Bāyazīd at once went up to the citadel to give the good news to the Bēgams. They sent out a number of their servants to inquire how it was certain that it really was Hēmū's head, to which Bāyazīd replied by sending them Mun'im Khān's letter to read.

P. 90*a* tells of Bāyazīd's being sent for and reproved by Maryam-makānī's orders for not clearing out a house for a servant of hers. He pleaded Mun'im Khān's commands and was forgiven. On this occasion Māh Cacak Khalīfa acted as interpreter or perhaps as go-between. After this the Bēgams, including Salīma Sulṭān and Bīka Bēgam went off to India.

P. 93*a* mentions that Ḥaram Bēgam, the masterful wife of Sulaimān, left Badakhshān on account of some disagreement and came to Kābul. Her husband went to Mun'im begging him to induce her to return. He was successful and Bāyazīd escorted her a part of the way back.

P. 95*a* records the death of Mīrzā Ibrāhīm, son of M. Sulaimān. He and his father, who had been in 72 fights with the Uzbaks and had always been successful, went against Balkh, but this time Ibrāhīm got separated from his father, was taken prisoner and put to death. The date was 966.

P. 98*a* describes a visit paid by Mun'im Khān and other grandees of the Court to the shrine of Khwāja Quṭbu-d-dīn Bakhtyār Kākī on the occasion of the saint's anniversary. The shrine was in old Dihlī, *i.e.*, near the Quṭb, which according to some, derives its name from the saint. Quṭbu-d-dīn Kākī was from Ūsh in Farghāna, which perhaps accounts for his popularity with Bābar's descendants, and his anniversary, *i.e.*, the day of his death, is the 27th November. There is a long account of him by Firishta at the end of his history and Abū'l-faẓl has also a paragraph about him, (Jarrett III, 363). Bāyazīd's elder brother, the saint and poet Bahrām Saqqā, was living in New Dihlī in the cell of Niẓāmu-d-dīn Auliyā near Humāyūn's tomb, but he too went off to the "Ūras" in the discharge of his self-imposed duty of water-carrying. On his way back he got a fresh attack of

jaẕaba, (attraction), and was insensible for several hours. Bāyazīd here refers again to his brother's poetry and gives three specimens of it. He says that his brother took to writing verse at the order of Shāh Qāsim Anwar who appeared to him in a dream at Samarqand.

P. 99*a*. Afẓal Khān asked Bāyazīd to try and procure the release of Bairām Khān's *dīwān* Muẓaffar 'Alī Tarbatī who was imprisoned in the house of Darvēsh Muḥammad Khān Uzbak. Bāyazīd mentioned the matter to his master, Mun'im Khān who bade Bāyazīd remind him of the request when he went to Court. Next day when the Khān-khānān (Mūn'im) was in the house of Māham Bēgha, Bāyazīd gave him a reminder. Māham was present and observed that the matter was not of such great importance, and that it was only necessary to send some one to Darwesh Uzbak's house to release Muẓaffar. The Khān-khānān, however, said that his Majesty must first be consulted, whereon Māham volunteered to mention the matter. While they were talking, Akbar came in from the chase, and after borrowing a needle from Takhta, the mother of Dastam Khān,[1] proceeded to extract the thorns, which had got into his feet in the jungle. Māham represented Muẓaffar's case and his Majesty granted the prayer and added that Muẓaffar was reported to be able to write *ṭughrā* and that the Khān-khānān might, if he liked, take him into his employment. Akbar, we are told, was highly pleased with the Khān-khānan for not acting in even such a small matter as the release of Muẓaffar without consulting him.

In pp. 100-101 we have a description of a game of cards at which Akbar was present. Bāyazīd played the game on board a boat with Muqīm Qara. Bāyazīd won, and as Muqīm had no money to pay his losses, Bāyazīd stopped playing. Thereupon Muqīm had to pledge his *pōstīn* or great coat and to sit playing in the cold. Mr. Erskine remarks that the joke seems to have consisted in Muqīm's suffering from the cold. At 101*b* we are told of Māham Bēgha's kindness to the author and of her giving him a house in Agra. There was a *nīm* tree in the grounds and Bahrām Saqqā, his brother, got him to put up a *saqqī-khāna* or water-house under it. Darwēsh Naẓīr, one of the Saqqā's disciples, put up a *saqqī-khāna* at the Fort Gate, and when Akbar rode out he used to take a drink, and also used to listen to recitations from the Saqqā's *Dīwān*.

P. 102*a* tells a story about Akbar's sending for eighteen rupees of which the only point seems to be the exhibition of Māham Anaga or Bēgha as a sort of centre of affairs. Akbar sent a eunuch to Khwāja Jahān for the money. He and other officers were in attendance on Māham Bēgha, and he peevishly said to the messenger "from

[1] Blochmann, 398.

whose *jāgīr* shall I take it?" Māham got over the difficulty by telling Takhlā, the mother of Dastam, to fetch the money from her Turkish waiting woman. Akbar was at this time, (968, 1561), devoted to the amusement of cock-fighting and in connection with this we are told a story about Shamsu-d-dīn Atka. This again is prefaced by a reference to Akbar's[1] orders that every one should shave their beards. Shamsu-d-dīn's beard (or perhaps his hair) was not long but still he had not cut it in accordance with the royal orders which he had only received when on his way from the Pānjāb. Akbar remarked upon this, and Shamsu-d-dīn replied by way of jest, that his hair had been longish but that when he came to Muttra, he had had it cut after the fashion of the Hindūs of that place. The courtiers applauded the joke, the point of which was its allusion to Akbar's Hindū proclivities. At this time it was the custom that every one who came to pay his respects, should bring a game-cock and Akbar told Shamsu-d-dīn that he must do the same. Next day Shamsu-d-dīn appeared, but without a game-cock. When however Akbar noticed this Shamsu-d-dīn replied that he had one. "Where?" said Akbar, and Shamsu-d-dīn answered "under my arm." Akbar signed to the attendants to search if this was so, and when they did so the bird set up a crow. Akbar now ordered a certain cock of his to be brought. "Let it be a fighting one," remarked Shamsu-d-dīn, "for mine is famous in Lāhor." When the royal game-cock was brought, Shamsu-d-dīn uncovered his and it was found to be a hen bird (*Mākīyān*). The two birds, the cock and the hen, fought and Akbar was greatly delighted.

In the end of 968, (August 1561), there was a hurricane (*jīkar*, dust-storm, Vullers *s.v.*) in Agra and the bridge of boats was broken. A fire too broke out in the carpet-house (*farāsh-khana*) of Māham Bēgha, and some of Akbar's dancing girls who lodged near it were burnt. The Khān-khānan went to condole with Akbar who seemingly was cynical enough to say that the burning of the girls was a small matter (*sahl ast*) and that they should go and console Māham for the loss of her property. This is followed by a story of how Akbar was unable to get his horse across the river owing to one of the pontoons having got detached, and how Bāyazīd, who is rather fond of blowing his own trumpet, contrived to make the horse jump across the gap.

P. 104*a* describes an entertainment given by the Khān-khānān when the guests took opium and also "coloured their teeth," (*dandān*

1 See Blochmann, 193 and Badāonī II. 303. But Bāyazīd's phrase is *ḥukm-i-mūy-i-sar guzāshtan* and perhaps this means to leave the hair loose.

rang kardand). Erskine supposes (in his translation) that this is a euphemism for drinking wine. It may also refer to the eating of betel or to smoking. Evidently it was something unusual or improper, for Bāyazīd excuses himself for joining in the teeth-colouring by saying that he always tried to go in for good fellowship.

P. 105*a* records that Bāyazīd got the title of Sulṭān from Akbar.

P. 105*b* describes the assassination of Shamsu-d-dīn by Adham Khān. When Akbar was roused by the noise and came and saw the body and Adham, he called the latter *kāndū*, (filth), or perhaps *gāṇḍū*, (sodomite), and struck him a blow on the ear and stunned him. (According to Abu'l-faẓl the expression used by Akbar was "son of a bitch"). After putting Adham to death, Akbar went to Māham's house and said to her "Māmā, we have killed Adham." Shortly afterwards he put his uncle, Khwāja Mu'azzam to death for murdering his wife. A few days later Akbar had a conversation with the Khān-khānān, and asked him what the people said of his reign. The Khān-khānān replied, "My king, (may you live 120 years!) the people love you and admire your perfect justice in killing Adham Khān for the murder of the Atka, and in putting to death Mu'azzam Sulṭān for murdering the daughter of Bībī Fāṭima." His Majesty rejoined, "I have done something better than this; it is strange that you don't mention it, but you know it all the same, though from certain considerations you don't refer to it." "What thing is it," said the Khān Khānān, "that I know and from certain considerations do not speak of?" Akbar replied, "What I have done better is this, that I have brought all the Atka's relations from Lāhor, and have scattered them like the stars of the 'Daughters of the Bear,'[1] giving them fiefs all over Hindūstān."[2]

The Memoirs now become rather tedious and uninteresting, though here and there we can glean valuable information.

At p. 108*b*, we have a reference to one Jabār Bardī Bēg who had served under Bābar and had for many years been a *darwēsh* and had settled in Badakhshān. He was now returning thither after visiting the tomb of Humāyūn. Many pages are taken up with an account of Mun'im Khān's return to Kābul and his defeat at Jalālābād. At p. 117*b*,

1 The expression is *dar rang-i-banātu-n-na'sh parīshān karda haryakrā bahar gōsha-i-Hindūstān jāgīr farmāda im. Binātu-n-na'sh* is the Arabic name for the constellation of the Great Bear whose stars stand apart and are not clustered like those of the Pleiades.

2 Probably Akbar thought that Mun'im did not refer to this act of justice or generosity because there was an old quarrel between Mun'im and the Atka and it was even supposed that Mun'im was the instigator of the murder. See Blochmann, p. 321.

there is a reference to one Mīrzā Shāh, the son of Jannat-āshiyānī. However this is not Humāyūn but a prince of the Deccan. There is a long account of Abū-l-māilī. This man killed his mother-in-law, Māham Cūcak, the wife of Humāyūn and mother of Muḥammad Ḥakīm. He was afterwards made prisoner by Sulaimān and put to death by Muḥammad Ḥakīm.

P. 122*b* speaks of a woman named Āghā Sarw-qad (cypress-form) who was formerly in the harem of Bābar and was now apparently the wife or mistress of Mun'im Khān. She came from Khān Zamān's camp to Mun'im's in the capacity of a spy or go-between.

P. 124*b*. We read of Akbar's hunting elephants near Cunār, just as his grandfather had done.

P. 128*b*. Bāyazīd repairs a *ṣaffa* or portico in Benares which had been erected by Humāyūn.

P. 130*a* gives an account of one of Akbar's meetings for religious debates. The *mullās* of Rūm (*mullāyān-i-rūm*) are mentioned as having been present, and probably this means Romish priests. One Mīrzā Muflis—a kingdom-less prince, and who is said to have been an adept at logic,—was present and was being pressed with a question by 'Abdu-l-lāh Sultānpūrī. His rival Shaikh 'Abdu-n-nabī was also there, and in his turn propounded a question to the Prince. The latter who had not replied to 'Abdu-l-lāh's question, and was probably posed by it, (see Lowe's Badāonī, 190) seems to have lost his temper and cried to 'Abdu-n-nabī "Slave (*Ghulām-i-kor*)! be a little patient till I have answered the big slave, and then I will answer you." Mīrzā Muflis, (to whom there is a reference in Blochmann, 541), went to Mecca and died there in 989, (1581), and Bāyazīd witnessed his interment.

P. 131*a*. tells of the wonderful feat of a man called Mīr Farīdūn, who had some years before swallowed eighty miṣqāls of *baras* or *barash* (an intoxicating drug or drink made apparently from Indian hemp) and who now, to please the Khān-khānān and his friends took 140 miṣqāls of the stuff. He also drank *Kōknār* (a preparation of opium) instead of water, and yet for several nights remained in company, and acted as if the drugs had no effect on him.

P. 132*a*. Bāyazīd came to grief, very deservedly for destroying a Hindū temple at Benares with pillars bearing an inscription 760 years old. He converted the building into a Madrasa, etc. Rāja Todar Mal was annoyed at this and got the inhabitants to complain against him. The result was that Bāyazīd lost his appointment and was for several years a *darwēsh*. After some years he became Mīr Māl or keeper of the Seal (Blochmann VI), and subsequently he was made governor of Cunār.

P. 135*a*. has mention of Rājā Gajpatī, (Blochmann, 399), who is called Rājā of the country of Acīna (اچینه ?) and is said to have held the *jāgīr* of Būjpūr and Bihīya, &c., extending over both banks of the Ganges. At that time he was loyal.

P. 147*a*. Gives an account of Mun'im Khān's removing his head-quarters from Tānda to Gaur (which Bāyazīd also calls Bangāla), and of the pestilence which broke out there. He says that the nature of the country is such that a pestilence (*wabā*) breaks out there every thirty years (*qarn*) and that on this occasion the plague was assisted by drunkenness (*kaif*). Mun'im Khān was himself a victim, dying there, according to Bāyazīd on the night of Monday, 18 Rajāb 982.[1] On the same night Muẓaffar, the deposed king of Gujrāt, and who afterwards escaped and gave Akbar so much trouble, arrived at Gaur, having been sent there by Bāyazīd from Cunār according to Mun'im's orders. Bāyazīd tells how he himself went afterwards to Gaur and of the difficulty he had in taking charge of Mun'im's property. In this connection he mentions the names of two women, *viz.*, Sēōr (Sarw) Āghā, Mun'im's widow, whom he describes as a reliable woman and one who had been in the harem of Bābar and Humāyūn, and another lady who was the mother of Khwāja Shāh Manṣūr, who was Mun'im's *bakhshī*. Bāyazīd said he had no wish after Mun'im's death to remain on active service. He gave up his post of governor of Cunār but held for a time the position of *dārōgha* of the Treasury. In the beginning of 986, (March 1578), he got leave to go to Mecca and left for that place with his wife and children. He was, however, detained for two years in Sūrat on account of a charge of malversation which was brought against him by his enemies. He got over this difficulty and was able to go to Daman, but there he had fresh troubles with the Portuguese and had to pay a heavy ransom before he was allowed to sail. They reached Aden in fourteen days and there a small boat came out to them, which had been sent by Gulbadan Bēgam and other ladies who had been to Mecca and were on their return. Bāyazīd sent the Bēgams news of India, &c. He spent a considerable time in Mecca, and lost his wife and one of his sons there. He buried mother and child in one grave, and occupied it himself for one or two hours *so that it should not be too small or narrow*. He sent his other children home, hoping that he himself should end his days in Mecca and might be laid beside his wife. But he had to return to India in consequence of hearing that his family had been made prisoner by the Portuguese at Daman. He left in 990, (1582), but had to wait long in Mocha harbour for a favourable wind. At last the "olive season" (*mausim-i-zaitūnī*)

[1] It should be 983. The English date is 23rd October, 1575.

came and brought a wind and they were just about to start when a boat called a "*tāwarī*" (see Blochmann, 241) came in from Diu and reported that all Gujrāt was in a blaze owing to the insurrection of Muẕaffar. In this extremity Bāyazīd consoled himself and his friend as they were sitting in the ship's cabin (*dabūs*) by taking an omen from Ḥāfiẓ, the result of which was to satisfy them that the descendants of Humāyūn would eventually prevail. He was eight months on board ship and after a voyage of two months arrived at the port of Kūda (qr. Gōdhrī, or perhaps Ghoga). Bāyazīd was in danger here but ultimately escaped to Sūrat. Apparently Muẕaffar let him go on account of their old acquaintance when Muẕaffar was his prisoner at Cunār. He liked the climate of Sūrat and was willing to stay there but his sons Sa'ādat Yār and Iftikhār who were in Akbar's service, wrote to him that the Emperor was expecting him. He therefore waited upon Akbar in Fatḥpūr Sīkrī in the end of 992, (December 1584), and was graciously received, getting a house and the *pargana* of Sanān, for which however he was to pay a rental of 14½ lakhs. Rājā Todar Mal did not like Bāyazīd and tried to screw a higher rental out of him. He got the *pargana* in partnership with his sons, and apparently it was not lucrative.

In 994, (1586), Bāyazīd was raised to the rank of a *manṣab* of 200[1] and next year he was made Steward (*bakāwal*) and chamberlain (*Ishaq Āghā*). But he was soon after attacked with paralysis and had to give up all his appointments. But in 998 he returned to work and was made a Treasury *dārōgha* and *amīn*. In 999 Akbar gave him (probably in consideration of his bodily infirmity) permission to sit in the royal presence, and declared before a number of courtiers that Bāyazīd was an honest man and had served the state for nearly two *qarn*, *i.e.*, for 60 years. The Memoirs were completed on Sunday, 1st Ramaẓān, 999, (13th June, 1591), and with this statement and some verses the book closes. Previous to this Bāyazīd describes some buildings that he erected at Lāhōr, and gives an account of the distribution of copies of his book.

[1] He must have got further promotion for Abu'l-faẓl, (Blochmann, 501), ranks him among the commanders of 300. Probably this was when he became Bakāwal Bēg in 995.

The Cāṭēçvara Inscription of Anaŋga-bhīma II of Orissa.—
By Nagēndranātha Vasu, *Editor, Viçvakōṣa.*

[Read August, 1898.]

In my article on the copper-plate grant of Nṛsiṁha Dēva II. of Orissa, read in May, 1896, in our Society's meeting, I merely alluded to this Inscription, expressing, however, my desire to publish it in full in a later issue. Now, compliant to that promise, I bring in my present article.

This Inscription, which was first noticed in the Viçvakōṣa[1] in 1894, is incised on a stone-slab in the temple of **Cāṭēçvara** (or Çiva) at Kisnapur village in the Padmapur Pargana, District Cuttack, and situated nearly 12 miles north-east from the town of Cuttack and 2 miles to the north of the road from Cuttack to Chaudbali. On both sides of this large temple, there are other temples of smaller size dedicated to Kṛṣṇa-Rādhikā and Pārvatī, but these latter from their very appearance and architecture are evidently of a later period than that of **Cāṭēçvara**. From the resemblance of architecture the temple of **Cāṭēçvara** may be classed as coeval with other temples, built in several places of Orissa during the 12th and 13th centuries of the Christian era. The whole temple is built uniformly of basalt stone locally called *baul-mālā*. The ornamental beauty and superior workmanship of the architect, are not a little exhibited in the temple, but much of its former beauty is, for want of repair, in gradual decay. The interior of this high temple is all dark, and now affords an unmolested habitation for innumerable bats, through the callous indifference of its votaries. In the sanctum of the temple, there is a deep excavation in which lies the Liŋga immerged in perpetual waters, save at the time of festivals when the water being drawn out the Liŋga makes its appearance.

A few people now inhabit the village Kisnapur, and they too, for the most part of them, are *Bhōpas*, *i.e.*, votaries to the God **Cāṭēçvara**. Formerly the temple of **Cāṭēçvara** had been vested with a large

1 See Viçvakōṣa, Vol. VI, p. 229.

dēvōttara property, but the votaries had alienated a great part of it, and consequently the income having greatly deteriorated, no longer are the offerings and ceremonies conducted in their former grand scale. One thousand bighas of land and 300 *bharaṇas* of paddy per year, are all that now exist to defray the expenses of the temple. A considerable sum is added to the income by the gifts from the visitors, during the two festivals of the Çivarātrī and the lunar Caturdaçī of the bright fortnight in the month of Kārtika, when a vast concourse of people floods into the place.

The tradition as to the origin of the temple, runs as follows:—

The site, on which the temple of **Cāṭēçvara** now stands, was a tank. In the vicinity, a village school-master taught his pupils, in his little *Cāṭaçālā*, *i.e.*, school. Mahādēva, the great god, himself came in the guise of a *cāṭa*, *i.e.* pupil, and began to learn with other boys. Now, all the other boys had to be harassed much for their school fees, and paid them after several demands made; but Mahādēva, the disguised *cāṭa* paid even before the first demand. Moreover, he would not be prevailed upon to disclose his parentage even at the injunction of the school-master. Doubts now began to grow deep in the mind of the teacher, as to the identity of this extraordinary boy, and one evening he secretly followed the *cāṭa*, when returning from the *Cāṭaçālā*. Then to his great astonishment the boy came direct to the tank, and to the ecstasy of surprise of the beholding teacher, plunged into the waters and disappeared! The night following, the teacher was visited by Mahādēva in a dream and addressed to the following effect:—"I was hitherto learning of you with a view to reveal my greatness, go and celebrate my name to the world, henceforth I shall be called **Cāṭēçvara**, the divine pupil." After this miracle, many came to study there and went out profound scholars. By and by, the fame of the virtue of this place reached the ears of the Utkala-rāja, who thereupon, caused the tank to be filled with earth, erected the beautiful temple upon it, established the present Cāṭēçvara-Liŋga within the temple, and dedicated a vast property towards its maintenance.

In this temple, we find an inscribed slab, bearing the inscription of **Anaŋga-bhīma II** of Orissa, which forms the subject matter of my present article. On the 7th of November, 1893, I went there with my friend Artatrāṇa Miçra of Maudā, to visit the temple of **Cāṭēçvara**. The votaries at our request brought the inscribed slab out of the temple and placed it upon the outer door. The darkness of the night was then fast approaching upon us, and I hurriedly took some rubbings of the inscription in pencil. Subsequently, however, another set of tracing of the same has reached my hand.

The size of this slab is 32·5″ × 22″. The average size of the letters is $\frac{5}{8}$″ × $\frac{1}{2}$″. The Inscription is in 25 lines, running through the entire length of the slab leaving a margin only of $1\frac{1}{2}$ inches on all sides. The letters belong to the ancient Bengali type of Kuṭila character, and resemble much the characters of the Mēghēçvara Inscription published in this Journal for 1897, and those of the Brahmēçvara Inscription, published in our Society's Journal, by Mr. Prinsep.[1]

The Inscription was written by a poet named **Bhāskara**, the principal object of it being to record the erection of a Çiva temple (of Cāṭēçvara) by **Anaŋga-bhīma II.**

The language is high-flown Sanskrit and generally correct.

As regards orthography;—the letter *b* is throughout denoted by the sign for *v*; *p*, *y* and *v* are sometimes doubled with the superscript sign *r*, *e.g.* in lines 2, 3 and 4. A curious mistake is committed in line 16, where *thaddiggajah* is written for *yaddiggajah*.

Opening with the words "Ōṁ adoration to Çiva," the Inscription first invokes the ocean as the abode of Viṣṇu and the birth-place of the Moon, who adorns the crest of Mahādēva. It then glorifies the family of **Cōḍagaŋga** born in the lunar dynasty, and gives the following list of Kings:—(1) **Cōḍagaŋga**, (2) his son **Anaŋga-bhīma I.**, (3) his son **Rājēndra** (Rājarāja), and (4) his son **Anaŋga-bhīma II.**, together with the names of two distinguished ministers, namely Gōvinda of the Vatsa Gōtra and the renowned Viṣṇu, the terrible foe of the Muhammadan ruler Tuṁghāna (Ṭughril-i-ṭughān Khān).[2]

Transcript.

L. 1. ॐ नमः शिवाय ।

स यस्मिन् मैनाकः स्मरति जनकक्रोडललितं
यदन्तः श्रीकान्तः श्रयति गृहजामाद्यपदवीं ।
सुरेभ्यस्तन्मथ्यव्यसनमनुभूय व्यथित य-
स्स्वधासत्रं सोयङ्गयति सरि-

L. 2. तामेकसुभगः ॥[3] [1]

तस्मादभूदिभ्यमादधानः
कलानिधिर्व्विश्वविलोचनानां ।

[1] J. A. S. B., Vol. VII, Plate XXIV.

[2] See *Ṭabaqāt-i-Nāṣirī*, pp. 740–63, and my article on the copper-plate grant of Nṛsiṁha Dēva II., J. A. S. B., Vol. LXV, Pt. I, pp. 233–34.

[3] Metre: Çikhariṇī.

यमर्प्पयामास गुणानुरागा-
न्नेत्रे मुरारिर्मुकुटे पुरारिः ॥[1] [2]
भूपास्तस्माद्बभूवुर्व्विसृमरसमरोदञ्चदाश्चर्य्यवीर्य्य-
ज्यो-

L. 3. तिर्ज्जालावलीढप्रतिभटकरटिस्थानदानप्रबन्धाः ।
येषाङ्कीर्त्तिप्रवाहैः प्रतिपदमुदयत्स्वर्द्धुनीसङ्गसौख्य-
प्रेङ्खत्कल्लोलकेलिः कलयति जलधिस्तानि लीलायितानि ॥[2] [3]
तेषाम्वंशे विशदयशसा-

L. 4. ञ्चोडगङ्गक्षितीन्द्र-
व्याजव्यक्तं नरहरितनोर्ज्ज्योतिराविर्व्वभूव ।
दर्प्पोद्दामद्विपमदनदीतीर्थसंन्यासिनो य-
न्निस्त्रिंशेन प्रतिनृपतयः प्रापिता मोक्षलक्ष्मीं ॥[3] [4]
धम्मिल्लं करपल्लवे कलितवान् प्रागेव वै-

L. 5. रिश्रियः
स्मेरामर्द्दतरङ्गितेन मनसा निस्त्रिंशवल्लीन्ततः ।
चक्रे वैरिवधूजनस्तनतटीर्य्यो मुक्तमुक्ताः पुरः
पश्चादुद्धरगन्धसिन्धुरमदप्रस्यन्दिगण्डस्थलीः ॥[4] [5]
यत्कल्लोलितमण्डलाग्रकुटिलाटोपस्फु-

L. 6. रत्साध्वसै-
र्यद्बाणप्रकरप्रहारतरलैः प्रत्यर्थिभिः पार्थिवैः ।
चण्डांशोर्दिवि मण्डलाग्रपटलं निर्भिद्य तन्मन्युना
मन्ये निर्वृतिगर्व्वितैरनुसृतो निर्व्वाणसीमारसः ॥ 6]
आसीत्

L. 7. सूनुरनङ्गभीमनृपतिः पुण्यातपत्रं ततो
न स्पृष्टः कलिकालकल्मषमसीकल्लोललीलायितैः ।
कोयं मन्त्रकलापदुर्मदकरिव्यूहं विहायामुना
अद्धामेकपदे नृपे कलयता साम्राज्यमासादितं ॥[5] [7]
स्वैरश्रुति-

1 Metre: Upajāti. 2 Metre: Sragdharā. 3 Metre: Mandākrāntā.
4 Metre: Çārdūla-vikrīḍita, and of the following verse.
5 Metre, Sragdharā.

L. 8. त्रयगवीभिरुपास्यमानो
गोविन्द इत्यजनि वत्सकुले द्विजेन्द्रः ।
राज्ञः क एष महिमा यदसावनेन
साम्राज्यभारवहने विदधे धुरीणः ॥[1] [8]
सेवानतप्रतिमहीपतिकेशपाश-
शैवालवल्लिशिख-

L. 9. रे नखराजहंसाः ।
यत्पादपङ्कजगृहाश्रमिणः स्वपन्ति
राजेन्द्र इत्यजनि तेन ततः क्षितीन्द्रः ॥ [9]
जज्ञेऽसौ तमनङ्गभीमनृपतिं यस्य प्रतापानलः
ज्वालासंवलितैः सुवर्णशिखरीयातिद्रवत्वं

L. 10. यदि ।
आदायैनमहर्निशं यदि घना मुञ्चन्ति धारौकरा
नाशाः पूरयितुं तथापि विजयी यद्दानकेलिक्रमः ॥[2] [10]
त्रैलोक्यं विमलीकरोति यदि तत्कीर्त्तिमुंधास्वर्द्धुनी
कण्ठे चेत् विलुठन्ति

L. 11. तद्भणितयो धिङ्मौक्तिकानां स्रजः ।
यत् पादाब्जनखद्युतिव्यतिकरैर्भूषाविधिर्यद्यभूत्
प्रत्यर्थिक्षितिपालभालफलके कः पट्टबन्धग्रहः ॥ [11]
तस्याथ क्षितिपालभालवड़भीनिद्रालु-

L. 12. पादाङ्गुले
र्विष्णुर्विष्णुरिवापरः कलितवान् साचिव्यमव्याहतं ।
श्वेतच्छत्रशतानि यस्य यशसा निर्म्माय किं ब्रूमहे
साम्राज्यं त्रिकलिङ्गनाथनृपतेरेकातपत्रीकृतम् ॥ [12]
ये याताः शरणं

L. 13. रणाङ्गणशिरस्सुन्यस्तशस्त्राः पुरो
यैर्वा दुर्दमदोर्विलासरसिकैरुत्खातखड्गैः स्थितं ।
आश्चर्य्यं यदमीद्वयेपि न चिरादासाद्य विष्णोः पदं
प्राप्ता निर्भरनिर्वृतिप्रणयितां प्र-

[1] Metre, Vasanta-tilaka; and of the next verse.
[2] Metre, Çārdūla-vikrīḍita; and of the next five verses.

L. 14. त्यर्थिनः पार्थिवाः ॥ [13]

विन्ध्याद्रेरधिसीमभीमतटिनी कुब्जे तटेम्भोनिधे-
र्विष्णुर्विष्णुरसावसाविति भयाच्चैतन्दिग्भ्रः पश्यतः।
साम्राज्यं सपरिश्रमेण न तथा वैखानसानामिदं
विश्वं

L. 15. विष्णुमयं यथा परिणतं तुम्घाणएथ्वीपतेः ॥ [14]

[1]कण्ठोत्तंसितसायकस्य सुभटानेकाकिनो निघ्नतः
किं ब्रूमो यवनावनीन्दुसमरे तत्तस्य वीरव्रतं।
यस्याशोकनकौतुकव्यसनि-

L. 16. नां व्योमाङ्गनेनाकिना-
मस्रप्रैरनिमेषवृत्तिभिरभून्नेत्रैर्महानुत्सवः ॥ [15]
साश्वाः परितः स्फुरन्ति हरयः खेलन्ति यमाजा [2]
प्रेङ्खद्भिः पथिपुण्डरीकपटलैर्दिक्चक्रमा-

L. 17. क्रम्यते।
सम्वासः कटकेषु मौलिषु पदन्यासः कुलघ्नाभृतां
वद्धा यत्र न काचिदुत्कलपतेः साम्राज्यलक्ष्मीं क्षतिः[3] ॥ [16]
क्ष्मापीठं कियदम्बरद्विपदथ स्वः सौधमेतत् कियत्
दिक्चक्रं किय-

L. 18. देतदेव कलय ब्रह्माण्डखण्डं कियत्।
आस्ते यत्र तनोति यत्र चरणं यत्रेदमामोदते
यत्र स्रज्यति यत्र वा निवसति स्वच्छन्दमेतद् यशः [4] ॥ [17]
तपनतनयामभ्यादत्तेवतंसयितुं शिवः
कुवलयकुल-

L. 19. कण्ठोत्तंसेन विभ्रति स्रुवः।
विचकिलवनोत्सङ्गे भङ्गीविदग्धालिनं खनं
अगति अनितश्वेताहैते तदा यशोभरिः[5] ॥ [18]
अनेन पुरुषोत्तमप्रणयिनीषु वारान्निधे-
स्तटीषु घटितास्तुलापु-

[1] Read कर्णौ। [2] Read यदिभाजा। [3] Metre, Sragdharā.
[4] Metre, Çārdūla-vikrīḍita. [5] Metre, Hariṇī.

L. 20. रथहेमभूमीभृतः ।
विलासवसतीभूतं कलयता बलारातिना
प्रचीवदनवारिजे तरलिताः स्म लोलं दृशः[1] ॥ [19]
पत्त्यानं सरसां प्रतैस्तत इतस्तेनाङ्किता यत्तट-
क्षेराम्भोजगभीरग-

L. 21. भंकुहरध्वस्ताध्वखेदोर्म्मयः ।
यन्तःसौरभसारशीकरमयैः पाथेयभारैरमी
मन्दंमन्दमनुव्रजन्ति पथिकानाम्बोधिवेलानिलाः[2] ॥ [20]
आन्दोलिकीकुटिलमैक्षत यं कटाक्षै-
र्यस्य त्रयो वदनताम्र-

L. 22. रसं चुचुम्ब ।
खैरं यदीयहृदये विजहार वार्त्ता
यं दण्डनीतिरपि निर्भरमालिलिङ्ग[3] ॥ [21]
उदग्रदोषादपथप्रवर्त्तन-
स्खलद्गतीनिश्रुतिदृष्टिविभ्रमैः ।
चकार तत्र प्रतिपत्तिसम्य-

L. 23. दा-
स्पदं पुराणानि पुनर्नवानि यः[4] ॥ [22]
कनककलसभारं भारयामास भास्वा-
नजनि रजनिजानि स्फाटिकः पूर्णकुम्भः ।
ध्वजपटचटुलश्रीर्यत्र च व्योमगङ्गा
विरचितममुनेदं धाम

L. 24. कामान्तकस्य[5] ॥ [23]
त्रिभुवनभयभ्रान्तिभ्रर्त्तुमेकार्णवन्त[6]
ञ्जलजयमिव यावत् कुर्व्वते पर्व्वतेन्द्राः ।
सदनमिदमुदच्चत्फेणपुञ्जप्रतिष्ठा-
मिह कलयतु तावद्दीयताच्च प्रशस्तिः ॥ [24]
लोक-

[1] Metre, Pṛthvī.
[2] Metre, Çārdūla-vikrīḍita.
[3] Metre, Vasanta-tilakā.
[4] Metre, Vaṇçasthavila.
[5] Metre, Mālinī; and of the next verse.
[6] Not clear.

L. 25. चतुर्दशनमाति यशो यदीयं
विद्याश्चतुर्दश न लप्यति यस्य बुद्धिः ।
मन्वन्तराण्यपि चतुर्दश यस्य शक्ति-
र्न श्लानिमेति स कविः किल भास्करोऽस्याः ॥[1] [25]

Translation.

Ōṁ! adoration to Çiva!

Verse 1. Hail to the Ocean, the sole lord of all the rivers, where the mount Maināka is enjoying the pleasures of the paternal lap of the Himalayas, where even the lord of Lakṣmī himself lives as a son-in-law in his father-in-law's house, and who has undergone that process of churning as a svadhā sacrifice.[2]

V. 2. From that ocean was born the moon, the wonder of all eyes, the love for whose virtues procured him a place in the eye of Murāri and on the crest of Purāri.

V. 3. From the moon was born a race of kings, the blazing fire of whose prowess stopped the rutty streams on the foreheads of the elephants of their adversaries in the field of battle; swelled by the streams of their fame, the sea, heaved up at every moment and thus enjoying the pleasures of the companionship of the heavenly river Mandākinī, still displays those sports in wavy frolics.

V. 4. In the line of these sovereigns of renown, the radiant halo of the person of Narahari incarnated itself as King **Cōḍagaṅga**, whose sword used to give deliverance to the hostile kings, when they turned, so to say, Sannyāsins on the banks of the sacred river, which flowed from the oozings of the elephants in fury of war.

V. 5. Who, in the battle-fields, used to clutch with the palm of his hands, first the locks of the goddess of fortune of his adversaries, and then his sword; who first deprived the breasts of the wives of his enemies, of their pearls, and then deprived the temples oozing juice of rut, of the unruly and maddened elephants, of their pearls.

V. 6. When the hostile kings, frightened by the sharpened arrows of the leader of the noisy army obtained deliverance by his arrows it seemed, as if, to avenge their wrongs, these kings proud of their deliverance, were penetrating through the reign of the sun which travels in the sky and which resembled the king in his fiery character.

[1] Metre, Vasanta-tilaka.

[2] Svadhā means oblation offered to the Pitṛs or spirits of deceased ancestors.

V. 7. His son was **Anaṇga-bhīma,** who remained untouched by the ink-like sea of sin of the Kali-yuga; who obtained possession of the empire not by taking to any conspiracy or a host of elephants but by the mere love of other kings.

V. 8. **Gōvinda,** who was superior to other Brāhmaṇs, took his birth in the Vatsa Gōtra. The Vēdas voluntarily served him, *i.e.*, he obtained a great proficiency in the study of Vēdas. This is not a great glory on his part, as the king appointed him to bear the burden of the whole empire.

V. 9. From him (*sc.* Anaṇga-bhīma) King **Rājēndra** (*i.e.* Rājarāja) took his birth, the nail-like swan of whose feet-lotus slept soundly on the moss-bed of locks of those hostile kings, who bowed down to him in submission.

V. 10. Whose son was called **Anaṇga-bhīma,** whose bounty triumphs, even if the golden Sumēru be melted by the fire of prowess and the clouds take up the melted gold and rain constantly to drench the quarters and slake the thirst of the needy, those showers of rain can never satisfy, but his bounty always satisfied the desires of all those who received it from him.

V. 11. Whose fame, when it whitens the Heaven, Earth and the Nether worlds, wipes away the glory of the heavenly Ganges which consists in her pure whiteness; whose praises when uttered by the throat makes away with the usefulness of the garland of pearls, the lustre of the nails of whose feet was the crown of hostile kings, who did not any more feel the necessity of wearing a turban on their head.

V. 12. Whose toes slept (like the domesticated birds) on the forehead of kings, which were, as it were, the tops of houses; whose ministry was accepted by Viṣṇu (a Brahmin) who appeared like a second Viṣṇu, whose fame unified the empire of the kings of three Kaliṇgas.

V. 13. Of the hostile kings, they that sought his protection at the very beginning of the combat, without shooting even an arrow, and they that, confident of the overwhelming strength of their mighty hands, raised their swords, it is strange that both these classes of adverse kings obtained, before long, the eternal happiness by gaining the feet of Viṣṇu, *i.e.*, those that died in the field went to heaven and there obtained final emancipation at Viṣṇu's feet, and those that sought protection were very glad to appear before the minister Viṣṇu and at his feet established peace.

V. 14. The Vaikhānasas could not even by their most austere penance comprehend the omnipresence and all-pervadingness of Viṣṇu to the extent to which the idea was realised by the **Tuṁghāna** King (*i.e.*,

Ṭughril-i-Ṭughān Khān), when he began, apprehending Viṣṇu here and there, to look around through extreme fear, while fighting on the banks of the Bhīmā, at the skirts of the Vindhya hills and on the sea-shores.

V. 15. What more shall I speak of his heroism! He alone fought against the Muhammadan King, and applying arrows to his bow, killed many skilful warriors. Even the gods would assemble in the sky to obtain the pleasure of seeing him with their sleepless and fixed eyes.

V. 16. Whose innumerable elephants and horses frolicked in all directions; whose white umbrellas when carried on the roads covered all the quarters; who lived in *Kaṭaka* and trampled over the heads of the principal kings, wherever any work of the imperial goddess of fortune of the King of Utkala had not made its progress.

V. 17. Think for a moment, how small is the earth to hold his fame, of what extent is the sky to spread his fame; how small is the vault of heaven again where to give a free scope to it; how small is the horizon where his fame rests like a garland, and how small is the whole universe to contain his fame.

V. 18. All the universe being whitened by his fame, Mahādēva takes Yamunā (mistaking her for the Ganges) up to adorn his crest, the fair ladies hold the blue water lilies (now white) in their garlands; . . . . . .

V. 19. On the shores of the sea, which are the favourite of Puruṣōttama, he created several Golden-mountains (Sumēru) by the performance of the *Tulā-puruṣa* gift; and by erecting there hundreds of comfortable pleasure-houses attracted even Indra's eyes which were fixed at the lotus-like face of Çacī.

V. 20. He constructed several roads with hundreds of ponds, here and there, about them. The sea-breezes coming to these tanks rested for a while on the bed of the blooming lotuses and thereby after refreshing themselves of the fatigue of the journey, and bearing provisions of aqueous particles, fragrant with the sweet scents of the lotuses, floating in them, followed the travellers.

V. 21. Whom Logic saw with side-long looks, whose lotus-like face the Vēdas kissed, at whose heart the news roamed voluntarily; and whom the doctrine of administration of justice embraced heartily.

V. 22. He, who was rich in reputation, renewed with his clear sight into the Vēdas, all the Purāṇas now destined to be directed in the wrong ways through the gross-blunder of the expounders of them.

V. 23. He built this temple to Çiva the destroyer of Kāma. The sun supports its golden pinnacle, the moon himself is its crystal jar full of water, and the beauty of the banner of its spire is the heavenly river Mandākinī.

V. 24. As long as the principal mountains do heave themselves up the sea, and thereby protect the three worlds, so long do their temple proclaim the fame of its consecration here and sing the eulogy.

V. 25. The poet *Bhāskara* composed this eulogy whose fame could not be measured by the fourteen worlds, whose intellectual powers were not satisfied even with the study of the fourteen branches of learning, and whose pithy sayings are not to be depreciated even in fourteen *manvantaras*.

The date of the Jagannātha Temple in Puri, Orissa.—*By* Babu Monmohan Chakravarti, M.A., B.L., *Deputy Magistrate, Gaya, Bengal*

[Read August, 1898.]

The great temple of Jagannātha at Puri is widely known in India; but nothing definite is known about the time of its erection. Touching this point I adduce below some arguments based on recently discovered inscriptions.

The Gaṇgavaṁça copper-plates of Orissa contain the following important passage[1]:—

पादौ यस्य धरान्तरीक्षमखिलं नाभिस्तु सर्व्वा दिश्रः
श्रोत्रे नेत्रयुगं रवीन्दुयुगलं मूर्द्धापि च द्यौरसौ।
प्रासादं पुरुषोत्तमस्य नृपतिः को नाम कर्त्तुं क्षम-
स्तस्येत्याद्यदपैरुपेक्षितमयं चक्रेथ गङ्गेश्वरः॥
लक्ष्मीजन्मभुवं पयोनिधिरसौ संभावितस्य स्थिति-
र्नो धात्रि श्वशुरस्य पूज्यत इति क्षीराब्धिवासाद्भुवं।
निर्विण्णः पुरुषोत्तमः प्रमुदितस्तद्दासलाभाद्रमा-
पेतद्धूर्त्तगृहं वरं पितृगृहात्वाप्य प्रमोदान्विता॥

Translation:—

"What king can be named that could erect a temple to such a god as Puruṣōttama, whose feet are the earth, whose navel the entire sky, whose ears the cardinal points, whose eyes the sun and moon, and whose head that heaven (above)? This task which had been hitherto neglected by previous kings, was fulfilled by Gaṇgēçvara.

"The ocean is the birth-place of Lakṣmī, so thinking in his father-in-law's house (the ocean) Viṣṇu lodged with some shame, though he

1 Journal, Asiatic Society Bengal, Vol. LXIV, (1895), p. 139; Journal, Vol. LXV, (1896), p. 240. This pantheistic idea and even the very similes of the text may be traced as far back as Ṛgvēda (X, 90, 13-4).

got full adoration. Thus ashamed, the god Puruṣōttama was glad to get this new house; and Lakṣmī, too, gladly preferred living in her husband's new house to living in her father's house."

This passage shows that—

(1) a great temple was erected in Orissa dedicated to Puruṣōttama,

(2) that it was erected by order of Gaŋgēçvara *alias* Cōḍagaŋga, and

(3) that it was erected on or near the sea-coast.

Puruṣōttama is another name of Jagannātha, whose Kṣēttra and Māhātmya are still called Puruṣōttama-Kṣēttra and Puruṣōttama-Māhātmya. The description thus leaves no doubt that the temple erected by Cōḍagaŋga can be no other than the present temple of Jagannātha.

Cōḍagaŋga, however, ruled long, for nearly seventy years. His anointment (abhiṣēka) took place formally in 999 Çaka (17th February, 1078 A.D.). But he is believed to have practically ruled from two years back, 997 Çaka, so far as the numerous inscriptions quoted in Dr. Hultzsch's Epigraphical Report of 1895-96 (particularly those of Mukhaliŋgam) can be relied on. Similarly, if the date of Vajrahasta's accession be taken as 960 Çaka, then Cōḍagaŋga, his grandson, came to the throne in 997 Çaka (960 + 29 + 8),[2] or 1075-6 A.D. Orissa has been specifically described in the inscriptions to have been conquered by Cōḍagaŋga.[3] Consequently the temple of Jagannātha must have been begun to be constructed several years after his conquest. When the Orissan conquest took place is not known, but at least 8 or 10 years might be reasonably assumed to have elapsed before it was taken possession of. We thus arrive at the anterior limit of 1085 A.D., as the date before which the temple of Jagannātha could not have been built by Cōḍagaŋga.

The posterior limit can be arrived at only indirectly. In the Govindapura inscription of Gayā edited by Prof. Kielhorn, it is said—

गत्वा श्रीपुरुषोत्तमं [भग]वयोहृद्यः प्रतिष्ठापदं
पारावारतटे पटीयसि लसच्चन्द्रग्रहानेहसि ।
सर्वस्वं विततार तर्पितपितृस्तोमः करोल्लासितै-
स्तोयैर्यैः पिहितस्य पर्वणि विधोः साहाय्यमाप क्षणं ॥[4]

Translation:—

"Pleasing with his good fortune and youth, and a person of good renown, Manōratha went to the sacred Puruṣōttama, and on the

[2] Epigraphia Indica, Vol. IV, p. 190; Professor Kielhorn has thrown doubts on the English equivalent arrived at (see his note on the covering page 3, Vol. IV, pt. V).

[3] Ind. Ant., Vol. XVIII, p. 169; J. A. S. B., Vol. LXIV, p. 130.

[4] Ep. Ind., Vol. II, p. 334; for translation see p. 339.

noisy shore of the sea gave away his wealth in charity at the time of an eclipse of the bright moon; (and) gladdening his ancestors with the water thrown from his hands, he for a moment obtained the fellowship of the moon, eclipsed at full-moon time."

This inscription is dated 1059 Çaka or 1137-38 A.D. It was composed by one Gaṇgādhara, son of Manōratha. The extract shows that the composer's father paid a visit to Puruṣōttama, and gave gifts on the shore of the sea. This visit may be presumed to have taken place 12 or 15 years back from the date of the inscription, or about 1122–25 A.D. The Puruṣōttama-Kṣēttra and necessarily the temple must have existed by that time, and must have attained considerable fame to deserve such specific mention. Thirty to thirty-five years might be allowed for this sanctity and the temple can be fairly supposed to have existed by (1125–35 or) 1090 A.D.

That the Kṣēttra and the temple existed before the end of the eleventh century receives some corroboration from another inscription. In the Nāgpur praçasti of the Mālava rulers I find the following passage:—

देवासौ पुरुषोत्तमः स भगवानाश्लिश्रिये यः श्रिया
येनेदं बलिवैरिबन्धविधिना विश्वं समाश्वासितं।
येनाधारि वसुन्धरेति दधतः सानन्दमन्दाक्षतां
यस्य प्राच्यपयोनिधौ बुधजनैर्व्याजस्तुतिः प्रस्तुता ॥[5]

Translation by Prof. Kielhorn:—

"Near the eastern ocean clever men thus artfully proclaimed his praise, while he, pleased, looked on bashfully: 'O lord, it was the holy Puruṣōttama to whom fortune resorted, who relieved the universe by subduing the enemy Bali, and who supported the earth.'"

The king referred to is Lakṣma Dēva of Mālava, and the verse extracted is one of several describing his *digvijaya*. The verses preceding this refer to the invasion of East India, and the immediately preceding verse 43 refers to his conquest of Aṇga and Kaliṇga, while the immediately succeeding verse 45 refers to the eastern ocean. The allusion to the "holy Puruṣōttama" in the extract, and its juxtaposition with Aṇga, Kaliṇga and the eastern ocean points clearly to the Puruṣōttama-Kṣēttra and consequently its temple. The inscription is dated Samvat 1161 or 1104-5 A.D. Hence the Puruṣōttama temple would have existed some time before this, or say *circa* 1090 A.D.

[5] Ep. Ind., Vol. II, p. 187; for translation see p. 193.

To resume, the above discussion is intended to establish the following conclusions:—

(1) that the present temple of Jagannātha was built under the orders of Cōḍagaṇga of Gaṇga dynasty,

(2) that it existed by about 1090 A.D. and might have been built between 1085–90 A.D.,

(3) that the conquest of Orissa took place very early in the reign of Cōḍagaṇga, probably in the first decade of his reign (1075–1085 A.D.).

The above arguments are not conclusive, but in the absence of positive proof from any recorded inscriptions, they appear to me to carry much weight.

Notes on the language and literature of Orissa, Parts III and IV.[1]—*By* Babu M. M. Chakravarti, *Deputy Magistrate, Gaya.*

[Read December 1897.]

Part III. Oṛiyā Songs and religious Poems.

In Part II. I have given some glimpses of the Sanskrit compositions in Orissa during the mediæval Hindu rule. The vernacular compositions began to flourish from the close of this Hindu rule. This change was brought on through various causes. The first cause lay **in the study of Sanskrit** itself. Sanskrit drifted more and more from the colloquial speeches, and a study of the Sanskrit language came to mean years of hard labour. The elaborate and minute analysis and classification of Sanskrit grammars and rhetorics proved a heavy burden for ordinary readers, and the study of Sankrit literature became more and more unpopular among the leisured classes. If reading of Sanskrit works was found to be troublesome, the writing of works in that language was found to be still more so. The non-Brāhmin scholars continued to study Sanskrit literature on account of its high cultivation, but for compositions they turned their attention to the simple and familiar vernacular.

In Orissa this tendency was aided by its **close connexion with Tēliṉgānā.** By the 14th and 15th centuries the language of Tēliṉgānā, *i.e.*, the Tēlugu, had been well developed and an abundant Tēlugu literature had been produced. Through trade and through dynastic influences, Tēlugu songs, Tēlugu poems and Tēlugu grammars came to be well known in the southern part of Orissa. The leisured classes saw that the vernaculars were capable of being well-developed, and in this respect Tēlugu literature served as an excellent model. Thus a number of the non-Brāhmin scholars took to cultivation of their spoken speeches.

A further help in this direction was received **from the spread of**

1 Parts I and II are published in Journal Part I, 1897.

Vaiṣṇavism. The sanctity of Puri attracted a considerable number of devotees, and several maṭhs of Rāmānuja and other sects sprang up on its sands. About 1510 A.D. Caitanya, the great Vaiṣṇavite apostle of Bengal, first visited Orissa, and later on settled in Puri. Here he gathered a considerable following and by and by came to exercise much influence. Though a good Sanskrit scholar, he aimed to impart his religious instructions through the vernaculars. With the Paṇḍits he argued in Sanskrit, but to the laity he preached in their spoken dialect. His disciples came chiefly from the lower classes, and carried out this practice of vernacular preaching more extensively. In this way religion which had hitherto been a strong prop of the monopolising Sanskrit learning, ceased to be so. In contradistinction to Brāhmins, grew up a body of Vaiṣṇava gurus and mahantas whose influence gradually increased over the land, and with whose increasing influence the vernaculars came more and more to the front. The Vaiṣṇava devotees translated the Sanskrit religious works, composed new devotional poems, and by *saṅkīrtans* and vernacular songs considerably developed the power of the vernaculars. To the Vaiṣṇavites are due almost all the early vernacular compositions both in Orissa and in Bengal.

Another cause for the change lay **in the overthrow by the Mahomedans of the paramount Hindu power.** In 1568 A.D. the last independent Hindu king Tēliṅgā Mukunda Dēva was defeated and killed; and Orissa was overrun by the victorious army of Sulaimān Kerāni of Bengal. From that year for nearly two centuries Orissa remained subject to the Mahomedan rule, first under Pathans and next under the Mughals. On the transfer of the supreme power the influence of the Brāhmins and of the Sanskrit language received a check. The Hindu religion itself lost the powerful support of the ruling power. In the towns the Persian and the Persianised Hindī (Urdū) came into vogue. They showed the people that Sanskrit was not the only highly cultivated tongue in India. Hence a certain amount of freedom was produced which was favourable to the cultivation of vernaculars. In the towns and in the courts of petty Hindu chiefs many turned their attentions to compositions in Oṛiyā.

To summarise, the difficulties of compositions in the dead Sanskrit, the example of the early developed Telugu, the influence of Vaiṣṇavism and the supersession of the Hindu rule by the Mahomedans—all tended to swell the tide in favour of the vernaculars. Original Sanskrit works by the Oṛiyās practically ceased. From the 16th century downwards, one finds no real Sanskrit compositions by non-Brāhmins. Even among the Brāhmins the writers confined themselves chiefly to *ṭīkās* or ex-

planatory notes on Sanskrit classics. Small pieces, such as *Guṇḍicā-bijaya* or *Guṇḍicā-campu* (description of Jagannātha's car festival), or *Hāsyārṇava* (collection of comic verses) hardly deserve the name of works. Gradually even this Sanskrit scholarship declined and Brāhmins fairly well acquainted with Sanskrit classics or philosophy grew smaller in number. Young students were obliged to go to Benares for studying Sanskrit grammar or Vēdānta philosophy, or to Nadiyā in Bengal for studying Nyāya or logic.

It should not however be understood that because compositions in Sanskrit dwindled, Sanskrit language itself ceased to influence. Both Tēlugu and Urdū did not escape the influence of Sanskrit study, and so could make no change other than a general inclination towards the use of the vernaculars. The vehicle of expression alone changed; the intellectual atmosphere underwent no great change. Sanskrit classics, specially the later ones such as the *Naiṣadhīya* and the *Çiçupāla-vadha* were considered models to be closely imitated; while Sanskrit grammars and rhetorics supplied the rules of elegant compositions in Oṛiyā. Thus whether in versification or in the sentiment underlying them, in the outer forms or in the inner ideas of Oṛiyā poetry Sanskrit continued to dominate. At the time of discussing the later Oṛiyā poets, this preponderating influence of Sanskrit classics and rhetorics will be more fully seen.

The earliest compositions in Oṛiyā were

(A) Songs or

(B) Translations of the Sanskrit religious works.

These are generally in poetry. Certain prose works, such as *Mādaḷā Pāñji* or the chronicles of the Jagannātha temple and *Vaṁçāvaḷīs* or genealogies of royal families had been begun from old time. They have however no literary merits and their historical value I will treat at the end of this article.

SONGS.

Songs are the articulations of man's heart deeply moved, and are as common to the civilised as to the savage. They are based on a single sentiment, or a single incident, and do not require long continuous thinking. Hence they precede serious compositions, and take their birth from the early childhood of a language. Oṛiyā could not have been an exception, and Oṛiyā songs must have been current from an early period. The earlier songs are lost. The only song which I am inclined to think as pre-Mahomedan is *Kēsaba Kō-ili* (କେଶବ କୋଇଲି) of Mārkaṇḍa Dāsa. This is known widely in Orissa, and is taught to children in the *pāṭhçālās*. From its wide popularity it would appear

to be more than three hundred years old. Hunter's list[1] puts its date as 500 years old; but the reasons for this conclusion are not given. The song is based on an incident of the Bhāgavata. Çrī-Kṛṣṇa had gone to Mathurā leaving his mother Yaçōdā. Yaçōdā felt unhappy at the separation and poured out her grief addressing the cuckoo. The verse runs easy, and the subject—a mother's lamentation for her absent son—appeals to Indian hearts. No wonder therefore that the song is so popular in Orissa.

The other songs in current use are much later; but from the works of the chief Oṛiyā poets the names of several earlier songs can be traced. These songs passed into favourite tunes, and came to be thus noticed. Among the oldest may be named Rukmaṇi Cautisā (रुक्मिणी चौतिशा)[2] Madhupa Cautisā (मधुप चौतिशा) and Biprasiṁha Cautisā (विप्रसिंह चौतिशा).[3] Several other old songs are quoted as tunes by Upēndra Bhañja and in the Bicitra Rāmāyaṇa.[4] It is a matter of regret that most of these songs are now known only by their names.

[1] Hunter's Orissa, Vol. II, App. IX, p. 206. Here Mārkaṇḍa Dāsa is credited wrongly with the authorship of another song—Gyānōdaya Kō-iḷi. This song was really composed by Lōkanātha Dāsa, a disciple of one Trilōcana, and is much later. It deals with the mystical doctrines and symbols of Yōga, and some of the stanzas are really creditable, *e.g.*

जगतु ज्योति दुआर।
यहिँ बिले निराकार।
ज्योतिपरे ज्योति गोप्य।
यामिनी पाचि जळु चच्छि दीप लो।
यतन करि जगिबु यैवे।
युगे युगे योगी होइबु सेवे लो। २६।

"Luminous is the door to the universe where shineth the formless. Light unto light darkening, behold, the lamp is burning the whole night. Watch ye with care, then age after age ye can be a Yōgi [26]."

[2] Dīnakṛṣṇa Dāsa's Rasakallōḷa, 25th Chānda; Upēṇdra Bhañja's Baidēhīsabiḷāsa, 46th Chānda.

[3] Mathurā Maṇgaḷa, 5th Chānda for Madhupa; and for Biprasiṁha, see Mathurā Maṇgaḷa 27th and 30th Chāndas, Upēndra Bhañja's Baidēhīsabiḷāsa, 45th Chānda.

[4] Upēndra Bhañja mentions Jadusiṁha Cautisā (यदुसिंह चौतिशा), Baidēhīsabiḷāsa, 43rd Chānda; Haṁsadūta Cautisā (हंसदूत चौतिशा) Baid. Biḷ. 44th Ch.; Gōpajībana Cautisā (गोपजीवन चौतिशा) Do. 47th Ch.; Chapō-i (छपोइ) Rasapañcaka 1st Pañcaka. Similarly in the Bicitra Rāmāyaṇa one comes across Bā Cautisā (बा चौतिशा) Ādyakāṇḍa 16th Ch.; "Caḷa-i Ratha" ("चळइ रथ") Ayōdhyā Kā. 11th Ch.; "Kusuma Saurava" ("कुसुम सौरभ") Āraṇyaka Kā. 17th

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The existing songs begin with those of Upēndra Bhañja. Many of the later songs are now being compiled and printed. About four hundred such songs have now been published referrable to some 70 or 80 authors. Among them the most prominent authors are Upēndra Bhañja, Sadānanda Kavisūryyabrahmā, Makunda Dēva, Banamāḷi Dāsa, Rājā Jagadēva, Gōpāḷakṛṣṇa and an unnamed chief calling himself Aṣṭadurgānātha (or owner of eight forts). The first two authors will be separately noticed in Part IV. Makunda Dēva appears to be the king of Khōrdā who was imprisoned by the British for the Khōrdā rebellion of 1804. Rājā Jagaddēva was of Pārḷā Khēmḍi, District Ganjām; but his name I do not find in Mr. Sewell's list of Khēmḍi kings.[1] Banamāḷi Dāsa and Gōpāḷakṛṣṇa were two Brāhmins who appeared from their songs to have been devout Vaiṣṇavas.

Excluding from consideration the recent ones, the Oṛiyā songs are mostly *Cautisās*, that is in four or more couplets. Occasionally they are either *Chāndas* (like the ordinary poems)[2] or *Chapōis* (in six couplets), or *Bōḷis*.[3] As a rule, the songs deal with incidents of Rādhā and Kṛṣṇa. Loves of human lovers and mistresses are rarely treated, and then the author is most likely of a royal family like Upēndra Bhañja. This exclusiveness in the treatment of the subject-matter originated in the paramount influence of Vaiṣṇavism and is noticeable not simply in songs but also in the other classes of poetry as I will point out later on.

The songs while mostly devoted to Rādhā and Kṛṣṇa, deal not with their pleasures but with their pains and describe either the pangs of new-born love or the pangs of separation from the beloved. Rādhā and Kṛṣṇa have been reduced to human level, and even of this anthropomorphised love, not the spiritual but the physical aspect, is generally dwelt upon. Several of these songs are composed in the true lyric vein, but as they generally contain descriptions of acts and feelings which would not be

and Uttarā Kā. 39th Ch.; Urdhaba Cautisā (ऊर्द्धव चौतिशा) Laŋkā Kā. 4th Ch.; "Kōṭā-i Guṇḍicā" ("कोटाइ गुण्डिचा") Laŋkā Kā. 6th and 40th Ch.; Nandābā-i Cautisā (नन्दाबाइ चौतिशा) Laŋka Kā. 18th and 64th Ch., etc., etc.

1 Sewell's sketch of the dynasties of S. India, pp. 45-6.

2 Chānda songs are referred to in Mathurā Maŋgaḷa.

केवण चन्द्रवदनी छान्दगीतकु गाउथिला ।
छड़िला धाड़ी, धाँइला छाड़ि, इक्षण पड़ि गला ॥ 23rd Stanza 14th Ch.

"Some lady, with face handsome as the moon, was singing the Chānda song. (Seeing Kṛṣṇa) she missed a line, and ran, leaving singing and dropping her glances (in surprise)."

3 Bicitra Rāmāyāṇa, Jadu Bōḷi (यदु बोळि) Laŋkā Kāṇḍa, 34th Ch.; Dadhimanthana Bōḷi (दधि मन्थन बोळि) Do. 41st Ch.

tolerated in modern society, it is impossible to quote them here. One of the least objectionable is the following song from the pen of Banamāḷi Dāsa; it will give some idea of the Oṛiyā songs. The poet compares love to a sharp knife.

[राग भँभोट । ताल झुला]

प्रीति छुरी प्राण दिआ रे । वाजिव छातिरे करलुहा रे । घोषा ।
स्नेहलुहा यतने तताइ । अश्रुजळ तहिंरे देइ ।
मार कारिगर यतने गड़िछि, तहिंरे कळङ्क विष पिआ रे । १ ।
अतिवड़ तीक्ष्ण से धार । नेत्र न ठेकइ तहिंर ।
नवीन दर्पण परि झटकइ, सबु दिने देख दिशे नूआ रे । २ ।
से छुरीकि येऊ छुइँव । जाति कुळ सबु तेजिव ।
न पारिले धरि निश्चे नाश यिव, विरहिमानङ्क प्राण खिआ रे । ३ ।
बोले वनमाळी से छुरी । सान वड़ नुहे काहारि ।
याहा संगे येते पीरति करइ, तेतिकि करइ कुआ वुआ रे । ४ ।

Saṇgita Sāgara, first Taraṇga, p. 28.

"Love is like unto a sharpened knife; its iron hand strikes at the heart; [chorus]. With care heating the love-iron, and with eye-tears toughening it, behold, the love god smith has made it carefully, its rust, alas, being poison-drinking. [1]. Very, very sharp is its edge, on which eye cannot be kept; it shines like a new mirror, looking new every time one sees through. [2]. He who touches that knife will have to forego caste and rank; he who fails to seize it is sure to die, so deadly to separated lovers. [3]. Banamāḷi says that this knife (of love) belongs neither to the old nor to the young; how much (stronger) the attachment, lo! so much (greater) is the uproar. [4]."

A few words about **the music of these songs** might here be added. Oṛiyā music is essentially southern. In the mediæval times Tanjore was famed for its dancing and singing; and Tēliṇgāna was not behind hand. The Tēlugu music attained its greatest developments during the later Vidyānagara rule. Tēlugu songs are still regarded as among the sweetest in the Indian vernaculars. Orissa which was long subject to the Tēlugu influence naturally borrowed from Tēliṇgāna its music. The *rāgas* or major tunes are almost exclusively Tēlugu which adopted mostly Sanskrit names, such as Dēçākṣa, Kāmōdī, Bhairava, Mukhāri, Maṇgala, Gurjarī, Ghaṇṭārava, Kauçika, Dhanāçrī, etc. In course of time the major tunes were often modified by local peculiari-

ties. These modifications might be considered as minor tunes, and fall roughly under two denominations:—

(1) *Bāṇīs* (बाणी).
(2) *Bṛttas* (वृत्त).

The difference in musical notation between the two classes I cannot say. Some of the rāgas slightly modified are occasionally treated as Bāṇīs such as Cakrakēḷi (चक्रकेळि), Asāṛhasukla (आषाढ़शुक्ल), Kaḷasā (कळसा), etc. But the bulk of the Bāṇīs are evidently derived from favourite songs such as Munibara (मुनिवर), Rukmaṇi Cautisā (रुक्मणी चौतिशा), Biprasiṁha Cautisā (विप्रसिंह चौतिशा), Jadusiṁha Cautisā (यदुसिंह चौतिशा), Gōpajībana Cautisā (गोपजीवन चौतिशा), Chapō-i (छपोइ), etc. Bṛttas are similarly derived from favourite songs or poems such as Abakāsa Bṛtta (अवकाश वृत्त), Ḍhaga Bṛtta (डग वृत्त), Bhāgabata Bṛtta (भागवत वृत्त), Kṛṣṇakaḷā Bṛtta (कृष्णकळा वृत्त), etc.

In the latter part of the Mahomedan rule, the up-country music was gradually introduced into Orissa. The *tāḷas* or time-beating thus came into use. I find in the Vicitra Rāmāyaṇa[1] one tāḷa named as Ādim Guçir (आदिम गुज्जिर), which looks like an Urdu or Persian name. The well-known tāḷa Khēmṭā (खेमटा) is also mentioned in the above poem.[2] This appears to me to have been introduced before the Mahomedan conquest, and then apparently from the South. The Khēmṭā was known to Jagannātha Dāsa who refers to it thus in his Bhāgabata:—

खेमटा नादे गीत गाइ ।
के धाँए, सिंहनाद वाइ ॥ १६ ॥
10th Skandha, 19th Adhyāya, Printed Ed., p. 117.

(Speaking of the Gōpa boys and their sports says) "some ran singing to the *Khēmṭā* tāḷa, and some ran roaring like lions."

RELIGIOUS POEMS.

Along with the songs, the Oṛiyā religious poems are among the earliest. They had their origin in the religious yearnings of the people. When Sanskrit, the depositary of all sacred and mythological informations, became a dead language, it naturally failed to satisfy the desires of the populace. Hence translations into vernaculars came to be necessary, and numerous attempts were made to meet the popular demands. Such attempts must have been made from an early

1 Sundarā Kāṇḍa, 9th Chānda.
2 Ādya Kāṇḍa, 7th Chānda; Laṅkā Kāṇḍa, 27th Ch.

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time, but the earliest ones are lost. The existing works cannot be put before the 16th century A.D.

The chief religious poems in current use are:—

(1) The Çrīmad-bhāgabata (श्रीमद्भागवत) of Jagannātha Dāsa.

(2) The Rāmāyaṇa (रामायण) of Baḷarāma Dāsa.

(3) The Mahābhārata (महाभारत) of Sāraḷā Dāsa.

(4) The Harivaṁça (हरिवंश) of Acyutānanda Dāsa.

Generally speaking, these poems are not literal translations but summaries and free adaptations of the Sanskrit original. The verses are usually simple and unornamented; the details are lengthy and tedious. Though they contain occasional passages of good descriptions and fine sentiments, they cannot be ranked high as literary compositions. Their importance lies firstly in the fact that they have supplied the bulk of religious and mythological informations to a strongly religious people from generations to generations. They have influenced all castes and all ages. By children their stories are heard with rapt interest; by adults they are learnt and talked about; by women and old men they are listened for days and months devoutly and patiently as the passport to some worldly good or heavenly bliss. Secondly, they form important land marks in the development of the Oṛiyā literature. Before their time the Oṛiyā was a rude uncouth dialect, poor in ideas, poor in words. These religious authors nursed it, imported words into it or coined words for it, and gave it some polish. They showed that the Oṛiyā language could be made fit for expressing complex thoughts and abstract feelings, and by their own inperfect efforts made it capable of being utilised in various kinds of versifications. They prepared in fact the way for the later Oṛiyā poets Dīnakṛṣṇa Dāsa, Upēndra Bhañja, and Abhimanyu Sāmantasiṁghāra. Any sketch therefore of the progress of the Oṛiyā intellect would be materially incomplete if it fails to give some accounts of these old religious poems.

The most influential of these has been the Çrīmad-bhāgabata or briefly **the Bhāgabata**. Very little is known about it and its author. The work itself gives no clue to its time excepting the fact that it must be later than Çrīdhara Svāmi, much later because his name is referred to with high veneration.[1] Çrīdhara Svāmi was a Gujarātī Brāhmin

[1] श्रीधर नामे विप्रवर। कळियुगरे जन्म तार ॥ १०३ ॥
श्रीभागवत ये पुराण। अष्टादश ये शोळकेण (? सहस्रेण) ॥ १०४ ॥
ताटीका ये चतुर्थांश शश्रे। कहे शिरिधर परकाशे ॥ १०५ ॥

MS. Bhāgabata, 12th Skandha, 13th Adhyāya.

"The Brāhmin by name Çrīdhara was born in *Kaliyuga*. The Purāṇa Çri-Bhāgabata has *çlōkas* eighteen thousand. Its *ṭīkā* in thousands one-fourth (of the Purāṇa), Çrīdhara has expounded in writing."

whose *ṭikā* or commentry on the Bhāgabata Purāṇa is the best known. He is believed to have flourished by the 14th century A.D. Hence the Oṛiyā Bhāgabata must be much later than 14th century A.D. Starting from backward I find that it must be earlier than sana 1143 or 1736 A.D. in which year was copied a MS. of the fourth Skandha.[1] It is earlier than Baidēhisabi|āsa, one of the earliest poems of Upēndra Bhañja, for the Bhāgabata is referred to as a tune (Bṛtta) in its 27th Chānda. He preceded Dīnakṛṣṇa Dāsa whose principal work the Rasakallō|a is probably based on the tenth Skandha 1st to 52nd Adhyāya of the Oṛiyā Bhāgabata. Dīnakṛṣṇa refers to a tune Rukmaṇi Cautisā (Rasakallō|a 25th Chānda), and this tune is derived from a song which is likely to have been based on the popular vernacular Bhāgabata (10th Skandha 56th to 58th Adhyāya). If Dīnakṛṣṇa's time be taken at the middle of the 17th century, as I shall show later on, the Oṛiyā Bhāgabata must be still older and cannot be later than the close of the 16th century.

This is borne out by the general tradition, according to which Jagannātha Dāsa, the author of the Oṛiyā Bhāgabata, is identifiable with the Jagannātha Dāsa who founded the Atibaṛa subsect of Oṛiyā Vaiṣṇavas, and who was a disciple of Caitanya the great Vaiṣṇavite preacher of Bengal. This tradition is strongly corroborated by the Jagannāthacaritāmṛta which attempts to give a biography of the Atibaṛa founder somewhat like Caitanya's in the Caitanyacaritamṛta. In that work the author Dibākara Kara remarks in the 5th Adhyāya :—

श्लोक करि भागवतार्थ । पदें कलि भाषाचरित ॥ १६ ॥
पूर्वें येउं गोसाँइं यहिं । येवण भाषा कन्ति कहि ॥
से पद ठिक ठिक करि । लेखिलि भाषा अनुसरि ॥ १८ ॥ Ms. folio 28.

"Having understood the slōkas of Bhāgabata, I rendered them into *Bhāṣā*. The lines which my Gōsāī (*i.e.*, Jagannātha Dāsa) had said before in *Bhāṣā*, I correctly understood, and wrote following this *Bhāṣā*."

As Jagannātha Dāsa was a disciple of Caitanya, he must have flourished in the 2nd quarter of the 16th century, and the Bhāgabata was probably finished towards the latter part of this 2nd quarter.

The Jagannāthacaritāmṛta has not yet been printed. The manuscript which I am using consists of 136 folios with four lines on

1 See Supra pt. I, p. 330, J. A. S. B., Part I, 1897. The passage runs thus :—
इति श्रीमद्भागवते महापुराणे ... चिंशो अध्यायः ॥ ० ॥ समस्त रामचन्द्र दो महाराजाङ्कर १२ अङ्क सन ११४२ साले ए पुस्त(क) संपूर्ण होला । Ms. Folio 127.

each page. It is a curious mixture of Sanskrit and Oṛiyā verses. It purports to be a biography of Jagannātha Dāsa, but the first seven Adhyāyas treat more of Caitanya than of Jagannātha, while the 20th Adhyāya is exclusively devoted to a description of the Puruṣōttama Kṣēttra. The author Dibākara Kara was a Brāhmin Vaiṣṇava of the Atibaṛa subsect.[1] His time is unknown, but from the respect in which he is held by the Vaiṣṇavas of that subsect, he cannot be less than 150 to 200 years old. The biography is more full of quotations, eulogies and miracle descriptions than of facts, and after a wearisome reading, I have been able to cull the following few details about Jagannātha Dāsa.

Jagannātha was born at Kapilēçvarapura Sāsana, District Purī. His father was Bhagabāna Dāsa Purāṇa Paṇḍā (reader of Purāṇas), and his mother was named Padmā. The time of his birth is noted as noon of bhādra çukla aṣṭamī. As he grew into boyhood, he took up the usual studies of a Brāhmin, and he is said to have read up to his eighteenth year. *Apropos* of the Bhāgabata, it is said in the 1st Adhyāya:—

श्रीरामायण ग्रन्थ साधि । श्रीभागवते देले बुधि । १९ ।
द्वादश स्कन्द भागवत । टीका टिप्पणिहि सहित ॥ १०५ ॥

"Having studied the Rāmāyaṇa, he applied his mind to (studying) the Bhāgabata;—the twelve skandha-ed Bhāgabata with all its notes and commentaries."

After finishing the studies, Jagannātha Dāsa took up his father's pursuits, *viz.*, reading Purāṇas in the temple of Jagannātha. Here Caitanya often met him and was so much delighted with his reading and religious devotion that he made him a disciple. Gradually Jagannātha became the favourite of Caitanya who gave him the surname Atibaṛa or "the greatest." This displeased the other disciples, most of whom left Purī. Caitanya grew more and more fond of him and recommended him to king Pratāpa Rudra of Orissa. Soon after Caitanya disappeared (*i.e.*, died). Jagannātha Dāsa continued to reside in Purī. He showed various miracles to the king and converted him

[1] In the 5th Adhyāya the author thus speaks of his own ancestors.

मो नाम विप्र दिवाकर । निमदेव पिता मोहोर । ४ ।
गोपाळदासे खुड़ुपिता । नन्ददासे ताङ्कर पिता । ५ ।
ताङ्कर पिता बाद दासे । चम्पा नामेण माता मोर । ६ ।
भरद्वाज गोत्र मोहोर । बृहत्यङ्गिर प्रवर । ७ । MS. Folio 27.

"My name is Dibākara, a Bipra (Brāhmin by caste). Nima Dēba is my father, and Gōpāḷa Dāsa my uncle. Their father is Nanda Dāsa, whose father is Bā-i Dāsa. My mother is by name Campā. My *gōtra* is Bharadvāja, and (my) *pravara* Vṛhatyaṇgira."

and numerous others as his followers. Ultimately, Jagannātha Dāsa himself disappeared in the body of the Lord Jagannātha. According to the author, Caitanya was an avatāra of Kṛṣṇa, while Jagannātha Dāsa was an avatāra of Rādhā.

The Bhāgabata Purāṇa is the most sacred book of the Vaiṣṇavas, their Bible or Koran. The Oṛiyās are mostly Vaiṣṇavas, and hence the Oṛiyā Bhāgabata enjoys an immense popularity. In every respectable house a room is set apart in which the Bhāgabata with the other religious works is kept on a *gādi* (raised seat) and periodically or daily worshipped with flowers, tulsi leaves and sandal pastes. In every important village a shed is set aside at one end, where the villagers gather and hear every week the Bhāgabata read out by Brāhmins. On auspicious days the Bhāgabata is read out in a gentlemen's house to his friends and relatives, while the *pōthi* is always handled with care and respect.

I give below two extracts to let the reader have some idea of the writer's powers. The first gives a description of the summer season in the groves of Bṛndābana; and the second attempts to describe in vernacular the Māyā doctrine of Vēdāntism.

एमन्ते शुण परीक्षित । स्वभावे सरिला वसन्त ॥ ५ ॥
निदाघकाळ आगमन । घर्मे तापित सर्व जन ॥
सर्वदा वसन्त पवन । सधीरे वहे दिन दिन ॥
वसन्त नुहे ना दुर्ल्लभ । ये वने श्रीराम माधव ॥
नदीनिर्झर जळ नादे । निवीड़ झरङ्ग शुवदे ॥
निर्झर जळकणे मिळि । अतिशीतळ वनस्थळी ॥ १० ॥
नदीतरङ्ग पुष्पवन । पवन योगे कम्पमान ॥
जळे थाकइ पुष्प येते । कमळ कुमुद सहिते ॥
ताहाङ्क रेणु घेनि वळे । पवन वहे कुतुहळे ॥
एणु से वृन्दावन देश । निदाघ न करे स्परश ॥
घन गहन वन भूमि । तेणु नुहन्ति जोवे श्रमी ॥ १५ ॥
अति गभीर नदीजळे । लहरी वाजि उठे वळे ॥
पङ्क दिशइ येनि तट । भङ्ग तरङ्के धुआ तुट ॥
पुणि एवन भूमि देश । आदित्य न करइ ग्रास ॥
स्वभावे कुसुमित वने । चित्र मयूर पक्षी स्वने ॥
कोकिळ सारस निकर । भमर ध्वनि मनोहर ॥ २० ॥

10th Skandha, 19th Adhyāya, printed ed. pp. 115-6.

"Now listen Parikṣita. In due course passed away the spring. [5]. Came hot summer, perspiring all men. (But in Bṛndābana) every day the spring breezes blow gently. Spring cannot be rare in the grove where Çrī-Rāma (Balabhadra) and Mādhaba (Kṛṣṇa) are. The deep springs babbling, make murmurs in the river water. The sprays of the stream and of the springs mixing, keep cool the woody groves. [10]. With the breeze shake the river ripples and the blossoming groves. Playfully the wind wafts abroad the (pollen) dusts of the flowers in water, the lotuses, the nelumbiums, and others. Hence this Bṛndābana land with its deep woods and groves hot summer never touches; hence its residents never feel tired. [15]. In the deep river water, ripples rise one after another in force; muddy look both its banks; the ripples breaking wash the bathing recesses. Moreover, the sun never torments this forest grove, this wood by nature blooming with flowers, and resounding with the screams of the many-coloured peacocks, with the notes of the cuckoos and the cranes, with the delightful hum of the bees. [20]."

भो नाथ नम तो पयर। आदिपुरुष विश्वेश्वर॥
प्रकृति परे तोर वास। एणु प्राणिङ्कि अप्रकाश॥ ७०॥
जन्तुङ्क अन्तर बाहारे। तो विनु अन्य नाहिँ परे॥
आत्मादि मायायवनिका। जीव स्वरूपे थाइ एका॥
इन्द्रिय तुळे भोग करि। अभय आदि रूपे पूरि॥
तोहोर माया यार चित्ते। से तोते जाणिव केमन्ते॥
नटङ्क मध्ये ये नायक। से येझे नाटे मोहे लोक॥ ७५॥
नाना काढ़ेणि से भियाइ। नृत्यकारकु ये नचाइ॥
देखन्ता प्राणी मन मोहे। सत्य विचारे किछि नोहे॥

1st Skandha, 8th Adhyāya, printed ed. p. 40.

"Salutation to thy feet, oh Lord! thou, the first cause, the Lord of the universe. Thou residest beyond Prakṛti (nature), and hence art invisible to beings. [70]. The interior and the exterior of all creatures, nothing is outside thee. (The ideas of) *Ātmā*, i. e., Self and others are but so many *māyā* curtains, while in essence the Being remains the same. This Being enjoys through the senses; and puts on (as masks) forms like *abhaya*, and others. How can he know thee, oh Lord! over whose mind thine *māyā* (illusion) is? Just as the master among the *natas* (jugglers) by his juggleries fascinates the lookers-on; [75] and bringing forth various tricks and causing puppets to dance, bewitches the minds of spectators—but in truth they are nothing (so is it with thee, oh Lord!)."

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The Bhāgabata was also translated in Oṛiyā by Kṛṣṇa Siṁha, the Rājā of Dharākōṭa in Ganjām District, and this translation is believed to be more accurate. But like the revised version of the Bible it has failed to be popular. Hunter's list also mentions an Oṛiyā version of the Bhāgabata by one Kṛṣṇa Dāsa. The influence of Jagannātha Dāsa's Bhāgabata is traceable in many of the later works. It moulded three large works, *viz.*, Dīnakṛṣṇa Dāsa's Rasakallōḷa, Bhaktacaṛana Dāsa's Mathurā Maṅgaḷa, and the Prēmapañcāmṛta of Bhūpati Paṇḍita. Modified by Rādhā-cultism, it had its effect on the works of Sadānanda Kavisūryabrahmā and Abhimanyu Sāmantasiṁghāra. It suffused whether with or without Rādhā-worship, the numerous songs of the Oṛiyās (Cautisās and Pōis). As already pointed out it gave rise to a separate tune and class of versification. Even now various *Jātrās* based upon and borrowed from the Bhāgabata are played to large audiences in the mofussil, and are watched with much interest. The importance of this work in the past and even present life of the mofussil Oṛiyās it would be difficult to exaggerate.

Next in importance is the **Oṛiyā Rāmāyaṇa** (or as commonly pronounced Rābāṇa) of Baḷarāma Dāsa. Little is known about the author. He must be earlier than sana 1164 or 1757 A.D. in which year one of the manuscripts I have seen was copied. He apparently preceded the poet Upēndra Bhañja, as the latter refers to him respectfully as कृपा सिद्धाए गीत प्रकाशे, (*i.e.*), one who uttered his verses inspired by the grace of God.[1] This veneration presupposes a pretty long time back and agrees with the general tradition according to which Baḷarāma Dāsa was a disciple of Caitanya. In Jagannāthacaritāmṛta that I have already referred to, Jagannātha Dāsa is said to have been initiated as a disciple of Caitanya by मत्त बळराम दास (the enthusiast Baḷarāma Dāsa).[2] If he be identifiable with the author, then the Oṛiyā

[1] Baidēhīsabiḷāsa, 1st Chānda, 4th Stanza, printed ed., p. 4. Upēndra Bhañja does not name him, but this has been explained by his commentator.

[2] Jag. caritāmṛta MS., Folio 10.

येंउठि मत्त बळराम । वैष्णव मानङ्क उत्तम । १२६ ।
आसन शय (न) भोजन । भ्रमण स्थापन स्वपन । १२७ ।
रात्र दिवस न जाणन्ति । प्रेमरे मत्त होइ थान्ति । १२८ ।

"That enthusiast Baḷarāma, the best among the Vaiṣṇavas, he does not, while sitting, sleeping, eating, walking, lying, dreaming, know day or night; but is phrenzied in his devotion (to God)."

Balarāma Dāsa has been again mentioned in Fol. 36, as a chief disciple of Caitanya Dēva.

श्रीगौरिदास पण्डित । मत्त बळराम सङ्गत ॥

Rāmāyaṇa slightly preceded the Bhāgabata and will have to be placed in the 1st quarter of the 16th century.

Baḷarāma Dāsa came of a respectable family. He was a son of an Oṛiyā minister named Sōmanātha Mahāpātra.

महामन्त्रिवर सोमनाथ माहापात्र ।
वळरामदास ताहार अटइ पुत्र ॥

MS. No. 2, Fol. 308.

"Çrī-Sōmanātha Mahāpātrā is the chief of ministers. His son is Baḷarāma Dāsa."

He became a devout Vaiṣṇava and came to reside in Purī. In the closing passages of each Kāṇḍa he expresses his humility and prays to Jagannātha for his deliverance. His Rāmāyaṇa is simple in style and is generally written in one form of versification. He sometimes uses grammatical forms not now in existence, *e.g.*—

चर्म्मे नयनेण मु देखिलि जगन्नाथ ।
तेणु से वाखाणिलि आदिकाण्ड ग्रन्थ ॥

MS. No. 1, Fol. 447.

"With the eye of flesh have I seen Lord Jagannātha; hence have I been able to expound the work Ādikāṇḍa."

Here "nayanēṇa" contains an instrumental form of "ēṇa" which was derived from Sanskrit but is not now in use. Similar grammatical variations are also to be found in the Oṛiyā Mahābhārata. It is a pity that neither of these works has yet been printed. The influence of this Rāmāyaṇa is perceptible in several later works, such as Baidēhīsabiḷāsa of Upēndra Bhañja, Bicitra Rāmāyaṇa of Bisvanātha Khuṇṭi-ā, the Bicitra Rāmāyaṇa of Harihara Dāsa and Rāmalīḷā of Sadāsiba Dāsa.[1] The Rāmalīḷā Jātras of the mofussil are mostly based on this work. Kṛṣṇa Siṁha of Dharākōṭa translated another version of the Rāmāyaṇa, which though literally more correct has failed to catch the public ear.

[1] This author is not mentioned in Hunter's list. The manuscript consists of 92 folios with 5 lines on each page. The work describes in verse the story of Rāma from his birth to his abhiṣēka (crowning). The manuscript was copied in 1229 sana or 1820 A.D. and ends thus—

सदा सदाशिवकु एमन्त कृपा कर ।
रामसीता विनु आने मन नोऊ तार ॥ 121st Canto, 14th couplet.

"(Oh God!) Always do this favour to Sadāsiba, that his mind may not go elsewhere except towards Rāma and Sītā."

In addition to the Rāmāyaṇa, Baḷarāma Dāsa composed numerous smaller pieces, a list of which is to be found in Hunter's *Orissa*, App. ix. They amount to twenty-two and deal with various religious and ethical topics. Of these I have seen in manuscripts, the *Arjuna Gītā* (No. 2), *Gupta Gītā* (No. 14), and *Tuḷābhiṇā* (No. 23); and in print, *Bēdhā-parikramā* (No. 1), *Gajanistāraṇa Gītā* (No. 10), and *Mrugāṇistuti* (No. 17). I have also seen in print Kānta Kō-iḷi (कान्त कोइळि) which was composed by Baḷarāma Dāsa, but which has not been mentioned in Hunter's list. This song is put into the mouth of Sītā and describes the events from her abduction by Rāvaṇa to Rāma's abhiṣēka.

The next great epic of Sanskrit, **the Mahābhārata** has also been rendered into Oṛiyā. The popular version was by Sārōḷā Dāsa. He was a Çūdra by caste, and while he professed to be a Vaiṣṇava and speaks devoutly of Jagannātha, he was at heart a worshipper of the goddess Caṇḍī. The closing lines of each parva speak of Sārōḷā Chaṇḍī Ṭhākurāṇī; and in his last page he says—

यखँरपूरवासेनि हिङ्गुळा चण्डी शारोळो।
से मोर तुळसीमाळ हेले वक्षस्थळे॥

"The (goddess) Hiṅguḷā Caṇḍī Sārōḷō dwells at Jakhēṁrapura. She is my *tulasī* (*Ocymum*) garland that swings over the breast."

Then again his last lines are

श्रीचण्डी च यखँपूरवासीङ्क चरणे।
शुद्रमुनि शारोळादास पसीला शरणे॥ MS. Folio 245.

"At the feet of Çrī-Caṇḍī, the resident of Jakhēṁpura, the Çūdra ascetic Sārōḷā Dāsa seeks refuge."

The goddess Caṇḍī is said to be of Jakhēṁ which is probably the older form of the present village Jhaṅkaṛa in Thāna Tirtōḷa, District Cuttack. Here the worship of Sārōḷā Ṭhākurāṇī is widely prevalent and attracts considerable local pilgrimage.

It is impossible at present to find out the precise date of this work. It must be older than the 3rd Aṅka of Rāmacandra Dēva, Mithuna 21st, on which date the oldest manuscript I have seen was copied. The 3rd Aṅka of Rāmacandra Dēva II. falls in 1732-3 A.D.[1] How much older he was there is no means of knowing. But from its popularity and veneration, from its uneven versification, and peculiar forms of several of its words and grammatical terminations I infer that the work cannot be later than

[1] In Appendix IV of this article I have shown that Rāmacandra Dēva began to reign in 1731-2 A.D. His 3rd Aṅka or the 2nd year should therefore be 1732-3 A. D

16th century A.D. and might belong to its first half. Like the Sanskrit original it forms a gigantic undertaking and takes up about two thousand folios. It does not pretend to any literary finish, and the verses often rhyme unequally. But it has the merit of having superseded the Sanskrit Mahābhārata among the common mass.

According to tradition, Sārōḷā Dāsa was a resident of the village Kāḷināga in Parganā Jhaṇkaṛa. A cāsā by caste, he had three more brothers. He was considered the dunce of the family; but through the grace of Sārōḷā Dēvī, the principal goddess of Jhaṇkaṛa, he is said to have acquired the power of versifying. The goddess ordered him to compose the Mahābhārata in Oṛiyā; and when he expressed his inability to distinguish good from bad verses, she said "Write on palm leaves whatever comes to your mind. When you get disgusted, take the palm leaves so written to the river Candrabhāgā, and float them on its water. Gather those leaves which will float up to you and stitch them according to the order of receipt. This will be your Mahābhārata." In this way Sārōḷā Dāsa is said to have composed his work. Candrabhāgā is another name for the stream Buḍhā that flows past the village Tēntulipadā in Parganā Jhaṇkaṛa. After composing, Sārōḷā Dāsa took his poem to Purī, but there the Paṇḍits laughed at it. During the night, however, Lord Jagannātha appeared in a dream to the Rājā, and strongly recommended the work to him. Then by order of the Rājā, the work was re-examined by the Paṇḍits, who unanimously approved it. Pleased with his poem, the Rājā of Purī gave him, as *jāgīr*, Jhaṇkaṛa and three other Parganās. Sārōḷā Dāsa's descendants still live at Kāḷināga, Tēntulipadā and the adjoining villages, and now pass as Karaṇas or members of the writer-caste.

Another version of the Mahābhārata into Oṛiyā was prepared under the direction of the Rājā Kṛṣṇa Siṁha of Dharākōṭa. But this version though literally more correct, is hardly known among the people. The influence of the Mahābhārata, both Sanskrit and Oṛiyā, may be traced in certain brief redactions such as the Sucitra Bhārata of Kēsaba Dāsa and the Bicitra Bhārata of Bisvambhara Misra. Episodes of Mahābhārata were worked into smaller pieces as Kapaṭapāsā or fraudulent dice-playing, Subhadrāpariṇaya or marriage of Subhadrā, Gajanistāraṇa Gītā or the deliverance of the elephant in his fight with the tortoise, etc. In addition the Bhāgabatagītā which really forms a part of the Mahābhārata was translated into Oṛiyā; and a version of the Jaimini Mahābhārata was made for popular use.

The last important religious work I will notice is the Harivaṁça. In the original Sanskrit it is a supplement of the Epic Mahābhārata.

But as it treats of Kṛṣṇa and his career, it assumed more importance in a Vaiṣṇava land. Kṛṣṇa Siṁha of Dharākōṭa, in pursuance of his desire to have Oṛiyā translations of the chief religious works translated the Harivaṁça. But it is not known among the mass. They use two versions which are commonly designated as

(1) *Khaṇḍkiā* or single-volumed, and
(2) *Sātakhaṇḍi-ā* or seven-volumed.

The first is later and was made by a Brāhmin named Nārāyaṇa Dāsa. He speaks of himself thus in his last but one couplet :—

श्रीनीळसुन्दरनाथ अभय चरणे ।

विप्र नारायणदास नमइ वक्षस्थळे ॥ MS. Folio 272.

"At the safety-giving feet of the all-beautiful Lord of the blue (hill), the Brāhmin Nārāyaṇa Dāsa bows at heart."

As usual, nothing is known of him. But I am inclined to think that he was contemporary with the chief Oṛiyā poets, and probably belongs to the beginning of the 17th century.

The second work is much older and more popular. It was made by Acyutānanda Dāsa. He was a Çūdra by caste and was initiated into Vaiṣṇavism. He preached Vaiṣṇavism among the cattle-keeper caste (Gauṛas) and was given the title *Mahata*. Undoubtedly he was a devout Vaiṣṇava and his poem is full of expressions of humility. He lived in Raṇapura, a Tributary State adjoining the Puri District and was supported by its chief, Padmaḷābha Narēndra. According to Raṇapura royal genealogy, Padmaḷābha was the 97th king of the family, and ruled between 1477 to 1525 A.D. He is said to have accompanied the Orissa king Puruṣōttama Dēva in his raid to Kāñcī (Conjivēram). The time of this Harivaṁça should therefore be referred to the beginning of the sixteenth century. Certain personal informations were given by the poet himself in his closing lines.

रणपुर मझि मु आखण्डचळे मु वसिकरि थाइ ।
पद्मनाभ नरेन्द्र मोते अर्ज्ज देइ पोसइ ॥
जाति रे मुहि ये सुद्रजन्म अटइ ।
दीक्षा पाइ मु गउड़ कुळे थाइ ॥
समस्त गोपाळङ्कु नाम सिक्षा देइ ।
श्रीहरीचरणकु आश्रे करिथाइ ॥

ଗଉଡକୁଳରେ ମୁ ବୋଲାଇ ମହତ ।
ଦୟା କରିଛନ୍ତି ମୋତେ କମଳାକାନ୍ତ ॥
ଶ୍ରୀଗୋପୀନାଥଙ୍କ ଚରଣକୁ ଆସ ।
କବି ଅଚ୍ୟୁତଦାସକୁ ରଖ ହେ ପୀତବାସ ॥
ସାତଖଣ୍ଡ ହରିବଂଶ ହୋଇଲା ସମ୍ପୂର୍ଣ୍ଣ ।
ଅଚ୍ୟୁତଦାସ ଭାବଇ ଗୋବିନ୍ଦ ଚରଣ ।

MS. last chapter, folios 231–2.

"At Ākhaṇḍāca|a in Raṇapura I reside. Padmanābha Narēndra supports me. I am born of the Çūdra caste. Having received initiation (into Vaiṣṇavism), I stay among the Gauṛas; and teach and preach to all the Gōpā|as (Gauṛas), taking refuge at the feet of Çrī-Hari. Among the Gauṛas I am called *Mahata*. The husband of Kama|ā (*i. e.*, the god Hari) has taken mercy upon me. This prayer to Çrī Gōpīnātha's feet—Oh yellow-robed!—preserve the poet Acyuta Dāsa. The seven-volumed Harivaṁça is finished; Acyuta Dāsa meditates on Lord Gōvinda's feet."

Hunter's list (Vol. II, p. 197) credits this Acyutānanda Dāsa with a Sapta Bhāgabata which is evidently a mistake for the Sātakhaṇḍi-ā Haribaṁsa. The list also ascribes two smaller pieces to him: (1) Ananta Gōyi or the eternal mystery, and (2) Acyutānanda Mā|ikā or the prophecies of Acyutānanda.

The other religious works in Oriya are, as might be expected in the land of Jagannātha, mostly Vaiṣṇavite. They may be roughly divided into:—

(1) Paurāṇic, such as translations of Çiva Purāṇa, Padma Purāṇa, Mārkaṇḍa Purāṇa, and of the various periodical Māhātmyas, as Kārttika, Māgha, Vaiçākha, Ekādaçī;

(2) Poems, as Dharaṇī Dhara's translation of Gītagōvinda, and the translation of Haṁsadūta;

(3) Jagannātha worship—as *Guṇḍicābijē* or the procession of Jagannātha on his car to *Guṇḍicā*, the summer house; Dārubrahma, and the Dē-ō|a Tō|ā—an account of the origin of the god and his temple; translation of Puruṣōttama Māhātmya, etc.

These works appeared later, and have no such special literary merits as to deserve detailed notice. In the next part will be treated the chief Oṛiyā poets and this will conclude my sketch of Oṛiyā literature.[1]

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[1] In Oṛiyā pronunciation, the consonants v, y, and ç are hardened to b, j, and z respectively; hence the difference in transliteration.

Part IV. The later Oṛiyā Poets.

General Remarks.

The works of the following authors will be dealt with in this article. They form the most important part of the Oṛiyā literature.

1. Dīnakṛṣṇa Dāsa (दीनकृष्ण दास).
2. Upēndra Bhañja (उपेन्द्र भञ्ज).
3. Bhūpati Paṇḍita (भूपति पण्डित).
4. Bhaktacaraṇa Dāsa (भक्तचरण दास).
5. Bisvanātha Khuṇṭi-ā (विश्वनाथ खुण्टिआ).
6. Lōkanātha Dāsa (लोकनाथ दास).
7. Sadānanda Kavisūryabrahmā (सदानन्द कविसूर्य्यब्रह्मा).
8. Abhimanyu Sāmantasiṁhāra (अभिमन्यु सामन्तसिंहार).

In the treatment of the subject-matter, etc., the poets differ so little from one another, that a few preliminary remarks will suffice to point out the general characteristics of Oṛiyā poetry, and enable me to dispense with the detailed discussion of each poem. The remarks may be noted under the following heads :—

(*a*) The subject-matter.

(*b*) The versification.

(*c*) The sentiment.

On examining the narrative parts of these poems, two general tendencies are perceptible, one *religious*, the other *fictional*. **The religious tendency is exclusively Vaiṣṇavite.** By the time serious compositions had been begun in Oṛiyā, Çivaism in spite of its stronghold at Bhuvanēçvara, and Çāktism in spite of its prevalence at Jājapura, had ceased to influence the popular mind. Viṣṇu-worship was in full swing and naturally Oṛiyā poetry reflected this popular bent.

Viṣṇu was worshipped in various forms. One such form was **Jagannātha**, whose temple and worship at Purī still attract thousands of pilgrims. His rites were well-known to the above authors, who either resided at Purī or visited it on pilgrimage. Upēndra Bhañja translated into Oṛiyā verse the local Māhātmya, and Dīnakṛṣṇa described the well-known Ratha festival in his *Guṇḍicābijē*. In spite, however, of the veneration for Jagannātha in Orissa, his worship failed to be a great religion because it had no great epic or Purāṇa to fall back upon, and because it had no special organisation to propagate its doctrines. The priests and their agents busied themselves mainly in drawing pilgrims to the shrine and not in proselytising them into a sect; while no great scholar or preacher arose to elaborate the dogmas in any famous poem or religious work.

Rāma-worship, another variant of Vaiṣṇavism was somewhat more successful in Oṛiyā poetry. The Rāmayaṇa has always been the most favourite of Sanskrit poems; and the Rāmāts who came on pilgrimage or resided at Purī in the various *maṭhs* generally exercised considerable influence. Hence the career of Rāma was often selected for the subject-matter, such as Upēndra Bhañja's Baidēhīsabiḷāsa, Bisvanātha Khuṇṭi-ā's Bicitra Rāmāyaṇa, Sadāsiba Dāsa's Rāmalīḷā. But on the whole, it failed to be popular in Orissa because the Rāmāts were few in number and chiefly confined to Purī, and because it had to contend with the powerful influence of Caitanya and his disciples.

The most prevalent form of Vaiṣṇavism was and still is in Orissa **the Kṛṣṇa-worship.** I shall not burden this article with the origin and history of this great religion, interesting as the subject is, because long before the beginning of serious poetry, Kṛṣṇa-worship had become the favourite religion in Orissa. But since then Kṛṣṇa-worship underwent an important modification. Gradually a feminine element was added to the male type of divinity, and **the worship of Kṛṣṇa alone was superceded by the joint worship of Rādhā and Kṛṣṇa.** A similar and parallel transformation from the single to the dual type is traceable in the gradual development of Çivaism into Çāktism, and also in the Buddhistic hierarchy.

The name of Rādhā is comparatively modern. It is not to be found either in the Vēdic works or in the older Sanskrit classics and Purāṇas. The Harivaṁça, the Bhāgavata and the Viṣṇu Purāṇa, the triple Bible of the Vaiṣṇavites, are silent about her.[1] The earliest authentic mention of Rādhā is to be found in the Brahmavaivarta Purāṇa and in Jayadēva's Gītagōvinda.[2] Brahmavaivarta's date is

[1] The following passage of Çrīmadbhāgavata is twisted to mean a reference to Rādhā, but obviously it does not.

अनयाराधितो नूनं भगवान् हरिरीश्वरः ।
यन्नो विहाय गोविन्दः प्रीतो यामनयद्रहः ॥ २१ ॥

Bh. 10th Sk. 30th Adh. 23rd Çlōka.

"Evidently God Hari was devoutly prayed by this (lady), for Gōvinda has taken her (alone) to privacy leaving us behind."

Another passage (same Adhyāya 34th Çlōka) is quoted by the author of Caitanyacaritāmṛta as referring to Rādhā, but the text does not even mention her (Ādilīlā 6th parichēda).

[2] In Laghubhāgavatāmṛta, Rūpa Gōsvāmī quotes one passage as being from Padma Purāṇa.

यथा राधा प्रियाविष्णोस्तस्याः कुण्डं प्रियं तथा ।
सर्व्वगोपीषू सैवैका विष्णोरत्यन्तवल्लभा ॥

l. c. Cai. Car. Mṛ. Ādilīla 4th pari.

unknown, probably not earlier than tenth century A.D. Jayadēva flourished in the twelfth century. Rādhā-worship cannot therefore be earlier than ninth century and possibly later. She appears to have been evolved out of the Tāntric wave in East India, which gave rise to the worship of Tārā and Vajra-Yōginī in Buddhism, and to that of Durgā and Kālī in Çivaism.

The prevalence of Rādhā-worship in Orissa is largely due to the Bengal Vaiṣṇavites. Jayadēva's exquisite poem was much appreciated by Oṛiyā scholars, and five hundred years ago was ordered by the king Pratāpa Rudra to be sung every evening before Jagannātha to the exclusion of all other songs. Jayadēva's example in treating Rādhā as divine was followed in the Bengali vernacular by other poets, such as Bidyāpati, Caṇḍī Dās, Gōbinda Dās. Then came Caitanya, the great preacher of Nabadvīp. Partly influenced by the above poets and partly by the Vallabhācāris at Mathurā, he took to preaching Rādhā-cultism, and was ably assisted by his numerous disciples in Orissa and elsewhere. The worship of Rādhā became the most prominent part of his rituals, and after his death he himself came to be regarded as an incarnation jointly of Rādhā and Kṛṣṇa.[1] The preachings of Caitanya and his

"As Rādhā is the favourite of Viṣṇu, so her Kuṇḍa is his favourite. Among all the Gōpīs she alone is the most beloved of Viṣṇu."

The passage seems spurious. Padma Purāna is notorious for its large later additions, and even then no second çlōka is forthcoming in that voluminous work about Rādhā. Besides, Kṛṣṇa and not Viṣṇu should be associated with her. Furthermore if the author of Caitanyacaritāmṛta is to be believed (Madhyalīlā, 18th parichēda), Rādhā-Kuṇḍa was first discovered by Caitanya, and hence could not have been mentioned in Padma Purāṇa composed several centuries earlier.

Another passage is sometimes quoted to indicate the antiquity of Rādhā (Bṛhadgautamīya Tantra).

देवीकृष्णमयीप्रोक्ता राधिका परदेवता।
सर्व्वलक्ष्मीमयी सर्व्वकान्तिः सम्मोहिनी परा॥

"Dēvī Rādhikā, it is said, is rapt in Kṛṣṇa, the highest divinity, possessor of all prosperity and beauty, all-charming, the highest."

If the çlōka be genuine, it does not affect my arguments. The date of Bṛhadgautamīya Tantra is uncertain, but it cannot be much old, as all Tantras are comparatively modern and generally date from eighth century downwards.

[1] राधाकृष्णप्रणयविकृतिर्ह्लादिनीशक्तिरस्मा-
देकात्मानावपि भुवि पुरा देहभेदं गतौ तौ।
चैतन्याख्यं प्रकटमधुना तद्द्वयंचैक्यमाप्तं
राधाभावद्युतिसुवलितं नौमि कृष्णस्वरूपं॥

Rūpa Gōsvāmi's Kaṛacā, l. c. Cait. Car. Ādilīlā, 4th pari.

"Rādhā is but transformation of Kṛṣṇa's love, his hlādinī power. Essentially

disciples made numerous converts in Orissa who now pass as Gauṛiyās, and further more created a religious ferment that gave rise to several subsects, such as Atibaṛis, Bindudhāris, Kabirājis, Kāḷindi Vaiṣṇavas, and others. All of them accept the dual type (Rādhā-Kṛṣṇa) as their fundamental doctrine.

This change in the popular religious feelings acted on the poets. The songs were influenced quickly as they needed little learning and represented the first ebullitions. The chief poets were affected more slowly, because all of them knew Sanskrit, and the Bhāgavata and Harivaṁça were silent about Rādhā. The earlier poets Dīnakṛṣṇa, Upēndra Bhañja, and Bhaktacaraṇa dealt but little about her. In Dīnakṛṣṇa's Rasakallōḷa, Rādhā is named only in three places.[1] Upēndra Bhañja rarely mentions her in his voluminous compositions. In Mathurā-Maṅgaḷa two cantos are devoted to Rādhā (28th and 29th); but otherwise she is mentioned in three places only. In Bhūpati Paṇḍita's Prēmapañcāmṛta, the divine importance of Rādhā had been fully established, but other Gōpīs are still given some prominence. In the two latest poets, Sadānanda Kavisūryabrahmā, and Abhimanyu Sāmantasiṁhāra, Rādhā-worship superseded even Kṛṣṇa, and the other Gōpīs sank into insignificance. Their poems are full of her praises.

The other tendency in the selection of the subject-matter was towards fiction, purely imaginary stories as distinguished from the mythological. This fictional element was less strong, and appeared later both in Sanskrit and Vernacular. Imaginary tales were usually of two kinds, *viz.*, a collection of short tales stringed together by a slight connecting thread, or a continuous story with a hero and a heroine. In Sanskrit several examples of the first kind may be found, such as the Pañcatantra and its variant the Hitōpadēça, the Bṛhatkathā (as known in the version Kathāsaritsāgara), and Daçakumāracarita, with which may be compared the Buddhistic Jātaka stories and the Sanskrito-Buddhistic Avadānakalpalatā. In Oṛiyā such a type is wanting. The nearest approach to it is to be found in Dīnakṛṣṇa's Pratāpasindhu which is a collection of maxims and short stories like the Pañcatantra. The other kind which is best exemplified in Sanskrit by Subandhu's Vāsavadattā and Bāna's Kādambarī, found a more fruitful soil in Oṛiyā. Upēndra Bhañja composed some twenty romances, while the

one, (for enjoyment) they appeared before in two separate bodies. They two have now appeared in one named Caitanya. Him, so full of Rādhā's sentiments and brightness, and so filled with Kṛṣṇa's attributes, I salute."

[1] Rasakallōḷa 10th Ch. l. 10 (cf. ls. 1–16); 20th Ch. l. 18 (cf. 1–24); 31st Ch. l. 1, (cf. ls. 1–18 30th Ch.).

poems of Lōkanātha and the three early poems of Abhimanyu are purely fictional. Poems of similar nature are also mentioned in Hunter's list, such as Balabhadra Bhañja's Bhābabatī, Haricandra Dēva's Līlābatī, Padmalābha Dēva's Prabhābatī. Their contents are however yet unknown.

The framework of the romances is practically so uniform that it may be generalised by the following sketch. The story opens with the description of a beauteous girl attending on Pārvatī or Rādhā (Lakṣmī) in the heaven. Some prince (occasionally a Ṛṣi) sees her and falls in love with her who returns his love. For this Pārvatī or Rādhā curses her to take birth as woman; but on her entreaties changes the curse to human life with the lover as husband. The girl is born as a princess, and the lover as a prince. Their childhood and youth are then described. The one hears of the other, and falls in love. After some manœuvring they meet and fall more deeply in love. This gradually leads to marriage (occasionally Gāndharva marriage). A few months are spent in happiness, and then the lovers are separated by a *deus ex machina*. Each is obliged to live one year apart from the other. Several cantos then describe the griefs of the lovers and their passionate outbursts as one season passes and the other arrives. By grace of the goddess they are re-united and henceforth live a happy life. They become king and queen, and after death are taken back into the heavens.

The next head is **versification** which includes the prosody, the selection of words and their signification—in short the outer frame of poetry as distinguished from the inner spirit. An Oṛiyā poem is divided into parts which are named Chānda (canto); and the Chānda is divided into pādas (stanzas) that are made up of two to six lines. All the lines rhyme; blank verses are unknown. The pādas can often be scanned according to rules of Sanskrit prosody, but sometimes they are not. This arises from the fact that all Oṛiyā poetry, if not translations of Sanskrit religious works, are intended to be sung, and not simply to be read. Hence many pādas cannot be scanned, if simply read; while in singing there arises no difficulty, as the vowels may be shortened or lengthened according to the convenience of the singer. For this reason too, the Chāndas are much shorter than the cantos of Sanskrit classics, not generally containing more than a hundred pādas. Each Chānda is also set to a tune. These tunes are largely Sanskritic, but have also a fair number of local airs, as I have already pointed out under the head of songs.

As regards the selection and signification of words the Oṛiyā poets follow the rules of Sanskrit rhetoric as closely as the language permits.

Hence verbal formations and word jingles, which are reckoned as excellences in Sanskrit rhetorics, freely abound. The entire canto, or the entire poem begins every line with the one and same letter, as *ka*, *ba*, *ca*; or each stanza begins with the consecutive letters of the alphabet (*a* to *kṣa*); or they have lines without any vowel except *a* or without any conjunct consonants at all. Alliterations, and other kinds of repetitions of the same letters or group of letters (*yamakas or anuprāsas*) are lavishly used. Similes (*upamās*), metaphors (*rūpakas*), opposite meanings (*virōdhabhāṣas*), double and triple meanings, allusions to and analogies from Sanskrit classics are scattered "thick as leaves in Vallombrosa." The Oṛiyā language being too simple and too undeveloped to bear so much ornamentation, the poets have borrowed profusely from the immense vocabulary of Sanskrit with its numberless synonyms, antonyms and compound formations. The wild luxuriance of these rhetorical forms in Oṛiyā poetry it is impossible to describe; but some idea may be formed by studying the Kōṭibrahmāṇḍasundarī of Upēndra Bhañja and the Bidagdhacintāmaṇi of Abhimanyu Sāmantasiṁhāra.

Many of these formations are real poetic excellences, and many a line show pretty conceits, surprising fancies, appropriate illustrations, or happy combinations of words. They generally indicate a fairly complete mastery over Sanskrit rules and vocabulary. One's admiration is further enhanced, when he takes into consideration the imperfections of the vernacular and the general ignorance of the mass. At the same time the inordinate use of unfamiliar words and word-combinations and the constant straining after mere verbal excellences have produced various defects, such as unintelligibility, artificiality, over-ornamentation, and unsuccessful formations. Hardly any poem can be understood without a *ṭīkā* or commentary, and hence the lines lose the force and the vividness of impression that common familiar words would have conveyed. Then again the too exclusive attention to ornamentation of words—the mere husk and shell of poetry—has led to the neglect of the inner essence, and has made the poets careless about the natural development of plots, the evolution of characters, or the enframing of high thoughts.

Hence under the third head—**the sentiment**—the workmanship was in general crude, incoherent and not elevating. The ideal followed was that adopted in the later Sanskrit classics (Naiṣadha, Çiçupālavadha). This Sanskrit ideal was defective compared with modern standard. Humour was wanting entirely. Vigor and energy were absent in the male characters, and a low view of women was inculcated. The characters were not properly and consistently developed. The action of the

external events on human feelings and thoughts was not often painted in a careful or powerful fashion. On account of the low view of women, obscene descriptions crept in, descriptions which would not be tolerated in any modern works. All these defects were intensified in the Oṛiyā poems. Obscenities were multiplied. The hero becomes an unnatural man, selfish, exclusively bent on gratifying his sensual passions, and bursting into tears or passionate outbursts at slight obstacles. The heroine is painted with the same brush, impatient, without any self-restraint or self-sacrificing spirit so well-known in Indian wives and mothers, and as much inclined as the hero to gratify the physical desires. In truth the Oṛiyā poets busied themselves so much with polishing and decorating the outer frame, that they quite neglected to develop the inner spirit.

Dīnakṛṣṇa Dāsa.

With these general remarks, I now proceed to discuss the poets individually. The earliest poet is Dīnakṛṣṇa Dāsa. Very little is known about him. According to traditions gathered at Purī, Dīnakṛṣṇa is older than Upēndra Bhañja. The latter's Baidēhīsabiḷāsa is said to have been modelled after Rasakallōḷa; and when the similarity was pointed out to Upēndra by his father, he composed his well-known poem Lābaṇyabatī. A couplet is repeated in which Dīnakṛṣṇa questions as an elder poet, and Upēndra replies obediently as a younger poet. A pair of couplets are repeated in which Upēndra Bhañja refers with respect to Dīnakṛṣṇa.[1] A consideration of the style and the subject-matter lends support to this traditional priority of Dīnakṛṣṇa. Upēndra Bhañja flourished about the end of the seventeenth century; Dīnakṛṣṇa's date might therefore be taken as the third quarter of that century. He cannot be much older. For apart from tradition, his Rasakallōḷa refers to Rukmaṇī Cautisā which is evidently based on Jagannātha Dāsa's Bhāgabata—a work of the second quarter of the sixteenth century. This fact points to a difference of at least one hundred years between Jagannātha Dāsa and the author of Rasakallōḷa.

[1] उपरन्द्र वीरवर टेकि वेनि वाहाकु ।
रवितळे कविपणे न गणइ काहाकु ॥
जयदेव दीनकृष्ण पादे मोर शरण ।
आउ सबु कविङ्कर माथे वाम चरण ॥

"Bīrabara Upēndra, raising his arms, deems none a real poet under the sun. I pay my obeisance at the feet of Jayadēva and Dīnakṛṣṇa, but put my left leg on the heads of all the other poets."

According to Purī traditions, he was a Bhaṛa-ā, an illegitimate class attending on dancing girls and playing on musical instruments in accompaniment to their dancing and singing. He led at first a struggling life, and later on became a Vaiṣṇava. He is said to have resided at Purī and died there. Corroboration of these facts is found in his works. His illegitimacy partially explains his great humility, and probably led him to select Vasiṣṭha as the speaker in his Pratāpasindhu. Vasiṣṭha was known to the author as the son of a prostitute.[1] His Vaiṣṇavite tendency and his residence at Purī his works fully show. For unknown reasons he was absent from Purī for some time, as a couple of stanzas[2] in the Rasakallōḷa would seem to indicate. He knew Jagannātha and his daily services intimately.[3] Dīnakṛṣṇa is said not to be his original name, but to have been given at the time of his initiation as a Vaiṣṇava.

Dīnakṛṣṇa composed several works, of which I have seen in

[1] The poet remarks that every object in this world has some defect or other :—

निकळङ्क पद्म के पाइ गहि (?)।
कळङ्क पुणि सबुठारे अछि ॥ १७९ ॥

"Who can find out a nelumbium without stain? Blots are found in every object."

Then he goes on illustrating this. After quoting several examples he says:—

वसिष्ठ ऋषिङ्क कळङ्क अछि।
वेश्यापुत्र बोलि समस्ते बाहि ॥ १८९ ॥ Pratāpasindhu MS., Fol. 14.

"(Even) Vasiṣṭha Ṛṣi has his blot. He is known to all as a prostitute's son."

[2] करिथिला आश, मे क्षेत्रे निवास,
करिबाकु दीनकृष्ण।
कि अभाग्य तहिं, न पारिला रहि,
प्रभु नोहिले सदय्य ॥ २९ ॥
कर्म थिला याहा, भोग हेला ताहा,
के ताहा करिब आन।
करमकरता, कल्पवल्लदाता,
येवे नोहिले प्रसन्न ॥ ३० ॥ R. K., 24th Ch., p. 89.

"To reside in that *kṣētra* (land), Dīnakṛṣṇa had wished; what bad fate is his—he could not stay there, the Lord not favouring. [26]. What was in his fate, he has to suffer. Who can do otherwise, if fate's master, the giver of salvation, smileth not upon him? [27]."

[3] Rasakallōḷa, 19th Ch., 14–24; Guṇḍicābijē, and others.

manuscript Pratāpasindhu, and in print Rasakallōḷa, Guṇḍicābijē and Ārtatrāṇa Cautisā.[1] Guṇḍicābijē describes the car festival of Jagannātha; Ārtatrāṇa Cautisā is a prayer to Jagannātha for deliverance. Pratāpasindhu is larger and occupies in manuscript 131 folios with three lines on each page. The poem purports to have been delivered by the sage Vasiṣṭha in answer to Daçaratha. It contains maxims mostly culled from Sanskrit, with illustrative examples and stories. Occasionally Sanskrit çlōkas are quoted and translated. The versification is simple and has no special merit. Among maxims a very low view of woman's reliability is prominent.

It is on Rasakallōḷa that Dīnakṛṣṇa's fame rests. The work is in 34 Chāndas with 20 to 99 stanzas in each. Its subject-matter is the early pastoral life of Çrī-Kṛṣṇa and is based on the 10th Skandha of the Bhāgavata. The first Chānda is introductory; the 2nd to 10th deal with the birth and adolescence of Kṛṣṇa; 11th to 17th describe the various seasons beginning with winter and the amorous sports of Çrī-Kṛṣṇa with the Gōpīs in each season; 18th to 24th poetise the Rasalīḷā or the dance and dalliance of Kṛṣṇa and the Gōpīs in the groves of Bṛndābana; 25th to 29th narrate his march to Mathurā and the slaying of its demon king Kaṁsa; the last five cantos are taken up in describing the griefs of Kṛṣṇa and of the Gōpīs on account of separation, and the embassy of Urdhaba to Bṛndābana under orders of Kṛṣṇa. The plot is thus familiar to most and appeals strongly to the religious instinct of the highly conservative Oṛiyās.

In versification the peculiarity of Rasakallōḷa is that every line of a stanza begins with one and same letter *ka*—a very difficult task in the case of a whole poem. On the whole, however, the sentences are more intelligible than in many poems of Upēndra Bhañja. Good descriptions of natural sceneries, though of the conventional type, are not rare; while poetical passages reckoned excellences according to the rules of Sanscrit rhetorics, abound.[2] Some of the closing lines are personal,

1 Hunter's list names nine more:—Cakradharabiḷāsa, Madhusudanabiḷāsa, Madhabakara Gītā, Bāramāsa Kō-iḷi, Jagamōhana, Sāmudrika, Guṇa Sāgara, Ujjvaḷa-nīlamaṇikārikā, Rādhā Kanaca (?), Dvādasakuñjalīḷā, and Kṛṣṇa Dāsa Baḷi. I have seen in print Bāramāsa Kō-iḷi; it is not Dīna Kṛṣṇa's. I have also seen in manuscript a Guṇa Gnyāna Sāgara of one Bhābi-ā Dāsa. Some of the works enumerated, such as the medical works, are not probably of Dīnakṛṣṇa.

2 For some of the rhetorically fine passages the reader may be referred to the description of the various seasons (11th, 12th, 15th and 17th Chāndas), and to the description of Rādhā's beauty (10th Chānda). In mere rhetorical excellences, however, the author cannot vie with Upēndra Bhañja or Abhimanyu Sāmanta-siṁhāra.

and are much soberer and often forcible. Two such passages which are free from obscenity are extracted to give an idea of his poetry.

1. कोटिए कोटि कीटे मूं एक ।
केते मोर बुद्धि केते विवेक ॥ ३० ॥
केथवा लेखिव गगन तारा ।
केथवा गणिव वरषाधारा ॥
के संख्या करिव सिन्धुलहरी ।
के पारिव पयोनिधि पहँरि ॥
केथवा एहा करि पारिव ।
कृष्ण महिमा कहि न पारिव ॥ ३१ ॥

R. K. 5th Chānda, p. 16.

"In the midst of crores after crores of insects I am only one. How little is my intelligence, my power of moral discrimination. [30]. Who can write out the stars of the sky; who can count the raindrops; who can take stock of the sea waves; who can dare swim across the ocean? even this may be possible; but the glory of Kṛṣṇa none can describe. [31]."

2. कलि ये तुम्भ नाम कुसुम, यतन करि माळा सुसम
ताहा मूलाइ नेवाकु केहि नोहिले क्षम हे ।
केवळ माळाकार पराये मूहिंत न घेनिलि थोकाए
के अछि नेव काहा करम एड़े उत्तम हे ॥
केहि नाहिं वेष्टित धम्मिल्लवन्त ये ।
करिवाकु ए माळ कण्ठे लम्बित हे ।
करुछि मने विचार एते, जगत याक अकृन्ति येते
सामवेदिङ्क व्रत वेश्म ए हेले सन्तत ये । २७ ।

R. K. 16th Chānda, p. 63.

"(Oh Lord!) The name-flowers of thine I have strung with care into a lovely wreath, which none is so fit to take by paying its equivalent. Like the wreath-maker, I myself could not take even a part; who so fortunate, that would take it? None there is all round so braided-haired (*i.e.*, blessed), that can put this garland round his neck. Thus am I thinking in my mind,—the people of this world have constantly become habited like the Sāmabēdists, (*i.e.* shavelings, and therefore unfit to put on the garland). [27]."

Bhaktacaraṇa Dāsa.

As Mathurāmaṇgaḷa appears to be a supplement of Rasakallōḷa that work will be taken up here, though strictly it might be somewhat later than Upēndra Bhañja's poems. The author calls himself Bhaktacaraṇa Dāsa. No traditions are available about him. He repeatedly calls himself a bairāgi.[1] He probably visited Purī, for he mentions the "Guṇḍicābijē" of Jagannātha (10th Chānda, stanza 6). The name Bhaktacaraṇa seems to be an adopted name after initiation into Vaiṣṇavism.

The Mathurāmaṇgaḷa is a poem in 30 Chāndas with 14 to 106 stanzas in each. The subject-matter is the exploits of Çrī-Kṛṣṇa at Mathurā. These exploits have been described in Rasakallōḷa, 25th to 33rd Chāndas, but is here amplified into 29 cantos. Hence this poem appears to be later, though from the prominence still given to Gōpīs generally, it could not have been much later. Its date might be approximately put to the first quarter of the 18th century. In versification and sentiment the author appears to have closely imitated the Rasakallōḷa. The verses are simpler, and less loaded with Sanskrit words; but have on the whole much less poetical excellences than in Dīnakṛṣṇa's poem. The author is rather peculiar in heaping similes to illustrate the same idea, an example of which is quoted below[2]:—

कृष्ण बोलन्ति शुण रमणीवृन्द ।
कर्पूर समान कि भास्कर गन्ध गो ।
पद्म समान काहिँ हेव कुटज ।
समान कला लोक सिना निर्ल्लज्ज । १० ।
पाट टसर काहिँ समान मूळ ।
हीरा सङ्गे स्फटिक हेव कि तूळ ।
पित्तळ नोहे कळधउत सम ।
चन्द्र पारुशे काहिँ रहिव तम ॥ ११ ॥
सेहि प्रकारे केहि मथुरानारी ।
से हेवे तुम्भ केउँ गुणरे सरि ।

Math. Maṇ. 8th Chānda, p. 23.

"Kṛṣṇa said—"Hear, oh ye ladies! Can *bhāskara* (the ordinary camphor) smell as well as *Çri-karpura* (the essence of camphor); can

[1] Math. Maṇ. 3rd Ch. 26; 13th Ch. 16; 15th Ch. 22; 18th Ch. 16; 23rd Ch. 54; 29th Ch. 38.

[2] For another example of such heaping, see 9th Chānda 11–15, p. 26.

the wild flower bear comparison to the nelumbium? The man that puts them on the same level must be shameless. [10]. Can jute have the same value as silk; can glass be compared to diamond? Brass cannot be equal to silver; darkness cannot stay where the moon is. Similarly what ladies of Mathurā can equal ye (Gōpa girls)?"

Bhūpati Paṇḍita.

The early Oṛiyā poems about Kṛṣṇa may be completed with Bhūpati Paṇḍita's Prēmapañcāmṛta. In the last Adhyāya of that work the author gives an account of himself.[1] A Sārasvata Brāhmin from up-country he came to Orissa and attended the court of the king Divyasiṁha Dēva. His poetical talents so much pleased the king that he gave him land with cash. He resided at Rathipura Kaṭaka. Caitanya Dāsa, a Vaiṣṇava at Purī was his great friend, and under his instructions he composed the poem. Its writing was finished on Monday evening, the çukla trayōdaçī of the month makara, 18th aṅka of the king Dibyasiṁha Dēva. Accccrding to Prof. Jacobi's Tables taken with Mādaḷā Pāñji,[2] makara çukla trayōdaçī fell on Monday, the 3rd February, 1707 A.D. Bhūpati Paṇḍita is thus a contemporary of Upēndra Bhañja.

The Prēmapañcāmṛta is a religious poem in ten Adhyāyas, and has been printed. It describes the rasalīḷā of Çrī-Kṛṣṇa and the Gōpīs, but the original story has been amplified by the description of an imaginary pilgrimage of Vasudēva (7th Adhy.) and by metaphysical disquisitions of the Caitanya's school. The lines are bald and generally unornamented. The versification is of the style adopted by Jagannātha Dāsa in his Bhāgabata. An extract is given here to show the author's conceptions about Rādhā:—

परम आत्मा भगवान । राधिका जीव आत्मा जाण ॥ २ ॥
राधिका अंशे येते गोपी । से कृष्ण जीवन स्वरूपी ॥ ४ ॥
परमे मिशि पारे जीव । आनकु अटे असम्भव ॥ ५ ॥
जीव परम एक जाण । भोग संयोगे भिन्न भिन्न ॥ ६ ॥
येसने बीज वेनिफाळ । एक से नुहन्ति युगळ ॥ ७ ॥
दि अर्द्ध एक पूर्ण होइ । एणु से एक अङ्ग दुइ ॥ ८ ॥
ये पारे गोपी अङ्के पशि । से पारे कृष्ण अङ्के मिशि ॥ ९ ॥

2nd Adhyāya, p. 11.

[1] The passage (10th Adhyāya lines 194–238), though long is interesting, and is given *in extenso* in App. III.

[2] See App. IV. for "the later kings of Khōrdā" beginning with this Divyasiṁha Dēva.

"Bhagabāna is the *parama ātmā* (the Highest Being); Rādhikā is *Jiva ātmā* (the Individual Being). [3]. The Gōpis in the Rādhikā's portion, are but so much life of Kṛṣṇa. [4]. The Individual can be absorbed into the Highest (*i.e.* the Infinite); for others, this is impossible. [5]. Know that the Individual and the Infinite are one (in essence), and different only in enjoyment and union. [6]. Just as a seed is bilobed; but really single and not double; [7], both halves forming one whole, and hence one body divided into two. [8]. He who can get into the body of the Gōpis, can get absorbed into the body of Kṛṣṇa. [9]."

Upēndra Bhañja.

The fictional school begins with Upēndra Bhañja. He is the most famous of Oṛiyā poets. His time can be ascertained approximately. In his Rasalēkhā he wrote—

दिव्य सिंह गजपति अङ्क सपत विंशति
पौषदिने पौष एङ्क गीत ।

R. L. 22nd Chānda, l. 17, p. 96.

"This poem was finished on the last date of the 27th Aṇka of the Gajapati king Divyasiṁha." Divyasiṁha began to rule in 1692–93,[1] and his 27th Aṇka or 21st year fell in 1713-4 A.D. The last date of the aṇka (siṁha çukla ēkādaçī) was 21st August, 1714 A.D., a Tuesday. As Rasalēkhā appears to have been one of his later poems, Upēndra Bhañja may be said to have flourished in the beginning of the 18th century.

He belonged to the royal family of Gumusara. Gumusara is a petty hill state forming the north-westernmost corner of the District Ganjām, Presidency Madras. The surname Bhañja was the patronymic title of the family. The author names his ancestors in Rasapañcaka last page as follows[2]:—

1 For a discussion of his reign see App. IV. "The later kings of Khōrdā."

2 कङ्केश वंश, चोद प्रकाश । क्रमे घुमुसरे चेले नरेश ॥ १६ ॥
कुन्देन्दुकीर्त्ति, रणरण कान्ति । रणेश्वर रणभञ्ज क्षपति ॥
छत्रानु तेज, ताङ्क तनुज । छतर प्रताप प्रतापभञ्ज ॥ १७ ॥
कनिष्ट सुत, ताङ्क भूश्वत । करि गोपीनाथ नाम विदित ॥
कवि क्षपवर, ताङ्क कुमर । करि धनञ्जय नाम ताङ्कर ॥ १८ ॥
काश्यपीकान्त, ताहाङ्क सुत । छतञ्च नीळकण्ठ भञ्जसुत ॥
कुमर ज्येष्ठ, ताङ्कर श्रेष्ठ । कविपक्षरे क्षनि परिनिष्ठ ॥ १९ ॥

Rasapañcaka, printed ed. pp. 89-90.

1. Raṇa Bhañja
   |
   son
2. Pratāpa Bhañja
   |
   youngest son
3. Gōpīnātha
   |
   son
4. Dhanañjaya
   |
   son
5. Nīḷakaṇṭha
   married Kāsyapī
   |
   eldest son
6. Upēndra Bhañja.

The Gumusara Baṁsābaḷī does not mention Upēndra Bhañja, but names his ancestors up to Nīḷakaṇṭha. In a colorless manner it narrates a series of intrigues and murders, revolts and civil wars, startling enough even for a melodrama.[1] Dhanañjaya, the grandfather of Upēndra, ruled long, and in his old age like the emperor Shāhjahān turned sensual. He married several wives who had numerous children. When the Rājā became too old, his queens with their sons began to quarrel amongst themselves. The old man, Dhanañjaya, was poisoned by his favourite queen Hāṛu Dē-i, and his death brought on a civil war. Upēndra's father, Nīḷakaṇṭha, who was his son by the above Hāṛu Dē-i, succeeded in seizing the throne. But he could rule only for two years. He was attacked on both sides by the partisans of the eldest queen's infant grandson, and was driven out of the kingdom.

Upēndra Bhañja was the eldest son of this unfortunate Nīḷakaṇṭha. In all probability he was old enough to have participated in the

"The family of sun (lotus' master) appearing, gradually became kings in Gumusara. [16]. With fame white like moon and *Kunda* flower, with glory bright, master of battles, appeared the King Raṇa Bhañja. Of him was born Pratāpa Bhañja, fiery in vigor, from deeds powerful. [17]. His youngest son, by name Gōpīnātha, became King. His son was named Dhanañjaya, the poet King. [18]. His son was Nīḷakaṇṭha Bhañja the good, the grateful, the husband of Kāsyapī. His eldest and best prince (am I), well-grounded in poetical powers. [19]."

Some of these successions are also mentioned in Lābaṇyabatī, 16th Chānda, stanzas 39–42, p. 65, and Baidēhīsabiḷāsa 52nd Ch. lines 47–50, p. 536.

[1] The portion of the Baṁsābaḷī bearing on Upēndra's ancestors is quoted *in extenso* in App. V.

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fratricidal struggle.[1] After expulsion Nīḷakaṇṭha settled, according to tradition, in the adjoining state of Nayāgaṛa. In that state how long Upēndra resided is not known. He visited the Puruṣōttama Kṣēttra apparently frequently, as he knew it intimately.[2] Outside Orissa he might have travelled, of which travel some faint indications are traceable in his poems. By religion he was a Vaiṣṇavite, leaning to Rāma-worship, as his numerous closing lines and the Baidēhīsabiḷāsa the poem on the career of Rāma testify.

Upēndra Bhañja was a prolific author and composed some forty-three poems. The chronological sequence of these works cannot generally be ascertained. Probably most of the songs were among his earliest compositions, and Caupadibhūṣaṇa is referred to in the early contemporaneous work, Bicitra Rāmāyaṇa. Baidēhīsabiḷāsa, according to tradition preceded the Lābaṇyabatī. The Kōṭibrahmāṇḍasundarī seems to be a work of matured years. The Citrakābya was composed much later and in its introduction refers to a large number of works, thus establishing a broad line of demarcation in point of time.[3]

[1] The following stanza in Rasikahārābaḷī (8th Ch. 25th stanza) might have some reference to his father's loss of the throne :—

राजाङ्कु हेवार राज्य नष्ट । युवाङ्कु हेवार पत्नीभ्रष्ट ॥
कहे उपइन्द्र, बीरबर भञ्ज, एथुँ बलि आउ नाहि कष्ट ॥ २५ ॥

"For a king to lose his kingdom, for a young man to lose his wife—says Upēndra Bhañja Birabara—no misfortune can be greater than these. [25]."

[2] Upēndra translated the Puruṣōttama Māhātmya, and composed the Rasikahārābaḷī, a romance of that place. The Kōṭibrahmāṇḍasundarī also begins with a description of Jagannātha's temple and festivals.

[3] एणु ए कवि विचारइ चिते । कलि मू अनेक प्रकाश गिते । ९ ।
अशेष चउतिशा चउपदि । ताहा केतेटि कहिवि सम्पादि । १० ।
गाहा दोहा षोड़चेन्दु छपोइ । इत्यादि कवित्व गणना नाहि । ११ ।
रसकृष्णविषय येते ग्रन्थ । चितोइ तहुं किछि लेखे येथ । १२ ।
पुराण छांकि कल्पना माधुरि । चारु चित्रलेखा हेममञ्जरी । १३ ।
रसलेखा कामकळा रचित । मनोरमा प्रेमलता सुगित । १४ ।
भाववती मुक्तावती प्रमाण । वरजलीळा ये छान्दभूषण । १५ ।
षड़ऋतु कळाकउतुकर । कनियम साद्य सुभद्रासार । १६ ।
वैदेहीश विळास सेहि वाद्य । प्रसिद्ध अवना द्वादश छान्द । १७ ।
रामलीळामृत श्लेष रचित । प्रेमसुधानिधि यमके स्थित । १८ ।
रसिकहारावळी नामे गीत । कुञ्जविहारादि श्यामचरित । १९ ।
अळङ्कार रीति रसपञ्चक । लावण्यवती रसिकतोषक । २० ।
पुरुषोत्तम माहात्म्य रचन । नाना कोष शब्दे गीताभिधान । २१ ।

Thirty-two poems are herein named. In addition Hunter's list specifies the following:—Candrakaḷā, Candrarēkhā, Icchābatī, Kaḷābatī, Rahāsalīḷā, Rasamañjarī, Saṇgītakaumudī, Sasīrēkhā, Sōbhābatī and Subarṇarēkhā. The last I have seen, and in one passage it admits its posterity by referring to Rasikahārābaḷī and Prēmasudhānidhi.[1]

All these works cannot be discussed in detail in this limited article, but their subject-matters may be classified in the following way:—

A. Songs:—
   1. Cautisā (चउतिसा).
   2. Caupadibhūṣaṇa (चउपदीभूषण).

छान्द कोटि तारा चन्द्रमा परि। या नाम कोटिब्रह्माण्डसुन्दरी। २१।
त्रैलोक्यमोहिनी आदि ये गीत। निश्चिंत छान्द पोथि पाछ थात। २२।
... ...
एते प्रकारे करि छान्द गीत। चित्त कवित्वे वळारन्हा चित्त। २७।

Citrakāvya MS. Folio 1.

"The poet thus thinks in his mind—many pieces did I publish in poetry. [9]. No end of *Cautisās* and *Caupadīs*, what more can I say on them? [10]. *Gāhā, dōhā, sōḍacēndu chapō-i*, and other poems that cannot be counted. [11]. Of works on *rasa* and on Kṛṣṇa recollecting, I name here some. [12]. Sifting the Purāṇas, such works of sweet imagination, as the fine *Citralēkhā*, the *Hēmamañjarī* [13]; the *Rasalēkhā*, the well-composed *Kāmakaḷā*, the *Manōramā*, and the well-versified *Prēmalatā* [14], the *Bhābabatī*, the well-exemplified *Muktābatī*, the *Barajaliḷā*, the *Chāndabhāṣaṇa* [15], the *Ṣaṛartu*, the *ka*-initialled *Kaḷākautuka*, the *sa*-initialled *Subhadrāsāra* [16], the *ba*-initialled *Baidēhīsabiḷāsa*, the well-known twelve chandas without any consonant or vowels conjunctions [17], the *Rāmalīḷāmṛta* full of many meanings, the *Prēmasudhānidhi* full of alliterations [18], the poem named *Rasikahārābaḷī*, the lives of Syāma as *Kuñjabihāra* and others [19], the *Rasapañcaka* illustrating rules of rhetoric, the *Lābaṇyabatī* the delight of wits [20], the composition of the *Puruṣōttamamāhātmya*, the various dictionaries of words as the *Gītābhidhāna* [21], the *Kōṭibrahmāṇḍasuṇdarī* like a moon among millions of poetical stars [22], the poems beginning with the *Trailōkyamōhinī*; some such five or seven poems have I composed [23]. Having composed poems of so many kinds, my thoughts strayed towards illustrated poetry [27.]"

[1] पाछ छान्दे शेष चौरन्हा ए रस करिब रसिक बश।
हे जने प्रेमसुधानिधि रसिकहारावळीर ए शेष। १८।
सुवर्णरेखार वर्णना येतेक रसे एड तिनि गीत।
कहे उपेन्द्र भञ्ज वीरवर अनुभव ए विदित। १९।

Sub. Rēk., 5th Chānda.

"This *rasa* comes to its end in five cantos; it will sway the wits. Oh men! Here is finished the *Prēmasudhānidhi*, and the *Rasikahārābaḷī*. [18]. All the *rasas* in the descriptions of the *Suvarṇarēkhā* are to be found in the three poems; this is felt and known—so says Upēndra Bhañja Bīrabara [19]."

3. Caupadīcandra (चउपदीचन्द्र).
4. Chapō-i (छपोइ).
5. Gāhā (गाहा).
6. Dōhā (दोहा).

B. Mythological poems :—

7. Abanā Rasataraṇga (अवना रसतरङ्ग).
8. Brajalīḷa (ब्रजलीळा).
9. Subhadrāsāra or Subhadrāpariṇaya (सुभद्रासार वा सुभद्रापरिणय).
10. Kaḷākautuka (कळाकौतुक).
11. Baidēhīsabiḷāsa (वैदेहीसविळास).
12. Rāmalīḷāmṛta (रामलीळामृत).
13. Kuñjabihāra (कुञ्जविहार).
14. Puruṣōttama Māhātmya (पुरुषोत्तम माहात्म्य).
15. Rāhāsalīḷā (राहासलीळा).

C. Fictional poems :—

16. Citralēkhā (चित्रलेखा).
17. Hēmamañjarī (हेममञ्जरी).
18. Rasalēkhā (रसलेखा).
19. Kāmakaḷā (कामकळा).
20. Manōramā (मनोरमा).
21. Prēmalatā (प्रेमलता).
22. Bhābabatī (भाववती).
23. Muktābatī (मुक्तावती).
24. Prēmasudhānidhi (प्रेमसुधानिधि).
25. Rasikahārābaḷi (रसिकहारावळी).
26. Lābaṇyabatī (लावण्यवती).
27. Kōṭibrahmāṇḍasundarī (कोटिब्रह्माण्डसुन्दरी).
28. Trailōkyamōhinī (त्रैलोक्यमोहिनी).
29. Candrakaḷā (चन्द्रकळा).
30. Candrarēkhā (चन्द्ररेखा).
31. Icchābatī (इच्छावती).
32. Kaḷābatī (कळावती).
33. Sasīrēkhā (शशीरेखा).
34. Sōbhābatī (शोभावती).
35. Subarṇarēkhā (सुवर्णरेखा).

D. Rhetorical, etc. :—

36. Chāndabhūṣaṇa (छान्दभूषण).
37. Rasapañcaka (रसपञ्चक).
38. Citrakābya (चित्रकाव्य).
39. Rasamañjarī (रसमञ्जरी).

40. Saṇgītakaumudī (सङ्गीतकौमुदी).
41. Gītābhidhāna (गीताभिधान).
42. Ṣaṛaṛtu (षड्ऋतु).

It will be seen that 20 out of 42 or nearly half are romances. To Upēndra Bhañja belongs the credit of having been the first to shake off largely the predominating religious tendency. This comparative freedom seems to have arisen partly from his birth in a royal family and partly from his vicissitudes in life, now a prince and now an exile. His stories are no doubt confined to princes or high ministers, and thus belong to the primitive stage of story-telling. Yet they are preferable to the dreary repetitions of mythological absurdities.

As a master of rhetorical excellences he stands higher than all Oṛiyā poets except Abhimanyu. He knew intimately the Sanskrit rules of elegance, and was a successful follower of the standard set up in the later Sanskrit classics. He was an adept in all kinds of Oṛiyā verses, writing freely and fully. He was a master-hand in vocabulary and letter-selection. Sometimes he wrote poems without any admixture of vowels other than *a*, *e.g.*, Abanā Rasataraṇga; sometimes he limited the initial letters of each line to one letter only, such as *ba* in Baidēhīsa-biḷāsa, *ka* in Kaḷākautuka, *sa* in Subhadrāpariṇaya. Sometimes he used *Jamakas* throughout a poem, as Prēmasudhānidhi; while Kōṭi-brahmāṇḍasundarī sparkles with numerous varieties of rhetorical gems. In spite of innumerable lines of unequal merits due to his prolificness and constant attempt to play on words, a large number of passages contain verbal excellences fit to stand the fierce light of modern criticism. By intermixing numberless unfamiliar Sanskrit words and allusions, the text has however been generally made unintelligible to the ordinary readers, and to most of his poems explanatory *ṭīkās* are absolutely necessary. Hence in spite of his rhetorical skill, his poems rarely move the heart, or add to one's knowledge about nature or the human mind.

On the question of sentiments he does not rise above his age. Wanting in energy and lifelikeness the heroes and heroines move like puppets. The low view of women common to the age and to the models followed still further degenerates in his poems; and obscene descriptions abound. Ethical doctrines are generally at a discount in royal families, and in Upēndra Bhañja's case the grandfather's sensuality appears to have had a still worse effect.

To summarise, Upēndra Bhañja is in Oṛiyā language, the most voluminous author, the earliest and most prominent fictional poet, the most obscene, the most unintelligible, and on the whole the best writer of rhetorical excellences. His most important works are first Baidēhīsa-

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biḷāsa on the career of Rāma up to Uttarākāṇḍa;[1] second Lābaṇyabatī, narrating the story of the princess Lābaṇyabatī and the prince Candrabhānu; third Kōṭibrahmāṇḍasundarī, a romance with the princess of the above name as heroine; and fourth Rasapañcaka, illustrating by Oṛiyā songs the rhetorical rules about Nāyakas, Nāyikās and their loves, and following mainly the corresponding text of the Bengali *alaṁkara*, Sāhitya Darpaṇ. A passage from Baidēhīsabiḷāsa is extracted lower down, but no single passage can give any reliable idea of the many-sided talents of this poet.

Bisvanātha Khuṇṭi-ā.

Such a talented poet as Upēndra must influence later poetry. On the religious side his Baidēhīsabiḷāsa found an imitator in the Bicitra Rāmāyaṇa of Bisvanātha Khuṇṭi-ā. This author appears to have been a resident of Purī. His surname Khuṇṭi-ā is applied to a special class of sēbakas in the Jagannātha temple, and the poem begins with a brief description of Jagannātha's festivals. His date is not precisely known. In his introduction he refers to the king Divyasiṁha, who reigned from 1692–93 to 1719–20 A.D.[2] He also refers to Upēndra Bhañja's Caupadibhūṣaṇa,[3] which is probably among Bhañja's earliest works. Approximately therefore the date of Bicitra Rāmayaṇa may be put in the decade 1710–20 A.D.

The poem, as its name implies, is an adaptation of the Sanskrit Rāmāyaṇa, and differs from Baidēhīsabiḷāsa in adding the Uttarakāṇḍa and in following more closely the story of the Sanskrit original. It is divided into generally very short cantos, and is therefore well adapted for singing. It is largely sung by dancing boys, and in old days was generally sung in the festival of Çrīrāma navamī, which occurs in

[1] Upēndra Bhañja did not poetise the Uttarākāṇḍa, because according to rules a poem should end happily and not in grief or death.

विभङ्ग रस बोलिण न वर्णिलि एते ।
बुधे बोलिछन्ति एहा दोष छान्द गीते ॥ ४६ ॥

Baid. Bil., 52nd Ch., p. 535.

"I have not described this (Uttarā-kāṇḍa), because then the enjoyment of the *rasas* will be broken. The learned have said that this is a fault in *chānda* poetry."

[2] "श्री दीव्यसिंह गजपति श्रीजगन्नाथ श्रीचरणे भजे" "I pay my obeisance to *Çrī*-Divyasiṁha Gajapati and to the auspicious feet of *Çrī*-Jagannātha." Ch. I, l. 5, Ādikāṇḍa. For Dibya siṁha's reign, see App. IV, "The later kings of Khōrdā."

[3] "राग आहारी । भञ्जङ्क चउपदी भूषण नअक्षरी वृत्ते ।" Bic. Ram. Āraṇyaka, Kāṇḍa, Chānda 2nd's tune.

spring (Caitra). The Bicitra Rāmāyaṇa cannot bear comparison with the poem of Upēndra Bhañja in point of learning and rhetorical skill, but it is simpler, shorter, and more free from obscenity. To illustrate their differences, one passage on the Pampā tank is given below with the parallel passage from Baidēhīsabiḷāsa.

प्रवेश्र राम लक्ष्मण पम्पासर तीर । देखन्ति निर्मळ जळ अति मनोहर । १ ।
कमळ कुमुद कोकनद नीळोत्पळ । मधुपाने मत्त होइ चुम्बन्ति भ्रमळ । २ ।
चउपाशे वेड़िछन्ति पुष्प तरुचय । विरहिजनकु से कराउछन्ति भय । ३ ।
देख देख लक्ष्मण ए सरोवर शोभा । एहा देखि केवण देव नोहिव लोभा । ४ ।
विविध हंसमानङ्के दिश्रइ सुन्दर । डाऊक तितिर काक वके शोभाकर । ५ ।
विकाश्रन्ति नव नव चूताङ्कुर माने । प्रकटि वासन्ति वास सर्व्व सन्निधाने । ६ ।
कामतूणिशर प्राय दिश्रन्ति अशोक । सीताङ्क विच्छेद कराउछि वड्ढ शोक । ७ ।
पाटळी पाटळ कामानळ प्राय दिशे । केतकी कळिका मनसिजकुन्त कि से । ८ ।
मल्लिका सौरभरे मधुकरनिकर । ध्वनि करि खोजुछन्ति सर्व दिगन्तर । ९ ।
मदगन्ध सुशीतळ प्रसरे मरुत । कोकिळ ध्वनि करन्ति होइ मत्तमत्त । १० ।

Kiṣkindhyā Kāṇḍa Chānda, I.

"Rāma and Lakṣmaṇa enter on the bank of the Pampā tank, and see its clear charming water. [1]. Drunk with honey, the black-bees are kissing the nelumbiums, the white lotuses, the large red lotuses, and the blue water-lilies. [2]. Trees and flowers surround it on four sides, and are causing fear in the hearts of the love-sick. [3]. See! See! Lakṣmaṇa, the beauty of this tank. At this sight which god will not be tempted? [4]. Charming it looks with diverse geese, with the water hens and partridges, with the crows and the cranes. [5]. The mango flowers are newly blooming, and are spreading their mild odour unto all. [6]. The *asōka* flowers look like the arrows of cupid's bow, and are grieving me for this separation from Sītā. [7]. The Bignolias shine like love-fire, while the Pandanus buds seem like the darts of love-god. [8]. The fragrance of the Jasmines is causing the bees to hum and to hunt about. [9]. The wind is spreading a cool intoxicating odour, the cuckoos are singing in full passion. [10]."

वाटे पम्पा सार सर । विराजित सारसर ।
विराजित सारसर । वृषारि सर से । ४९ ।
विधिरे हीन भ्रमर । विलसुछन्ति भ्रमर ।
विळास यहि भ्रमर । वाञ्छे अमर से । ५० ।

वारिरे आदरसरे। विमळ आदरग्गरे।
विवेक हंस मानस। वळि मानस ये। ५१।
विध्वंस ताप स्परश। वड़ अतळ स्परश।
विनिद्र नौळ सारस। वहइ रस से। ५२।
वाञ्छि तृषार्त्ति कमळ। विघन तोरे कमळ।
विरचे भृङ्गकु मुद। वज्ज कुमुद ए। ५३।
वुड़ि उठे चक्र चक्र। विहे गति यथा चक्र।
विनोदरे चक्रवाकी। विचका कि से। ५४।

Baid. Biḷā., Kiṣk. Kāṇḍa, 26th Ch., pp. 209-10.

"In the way lies Pampā, the tank of Indra, the best of tanks, which is graced by the long-necked cranes, and where bloom the Nelumbiums. [49]. This tank is by nature free from eddies, is enlivened by the black bees, is so delightful that the immortals are deluded to desire it. [50]. Its water is preferably more lucid than even a clean mirror, and (so good that) the geese think it better than that of even the Mānasa tank (beyond the Himālayas). [51]. Its water is so cool as to destroy all touch of heat, is very deep with flowering blue water-lilies, and is in taste as sweet as honey. [52]. The thirsty deers desiring a drink get satisfaction at the bank of this tank. The many white lotuses in it give much delight to the bees. [53]. The red ducks in it dip and rise, and delighted, whirl round in circles with their females, reminding the motion of dust storms. [54]."[1]

Lōkanātha Dāsa.

On the fictional side, too, Upēndra Bhañja's romances stimulated others, among whom Lōkanātha Dāsa appears to have been one of the earliest. His works have not yet been printed. I have seen in manuscript his Sarbāṅgasundarī and Hunter's list credits him with three more, Citrōtpaḷā, Parimaḷā and Rasakaḷā. The manuscript of Sarbāṅgasundarī takes up 63 folios with 4 lines on each page. It contains 15 Chāndas; apparently the last few Chāndas are missing. The story part resembles the general type of Upēndra Bhañja's romances, and the descriptions are also on the same line, though of course with much less poetical skill. The date is uncertain, probably the 2nd quarter of the 18th century.

1 This short canto exemplifies the rhetorical excellence known as "the final alliteration" (*anta Jamakas*). The force and the jingle music of the *Jamakas*, it is impossible to show in the translation.

Sadānanda Kavisūryabrahmā.

The last two poets are closely connected with each other, Sadānanda Kavisūryabrahmā being the guru of Abhimanyu Sāmantasiṁhāra. Sadānanda founded a little maṭh at Dikṣitapaṛā, Parganā Asurēsvara, Thānā Sālēpura, District Cuttack. From its present Adhikāri most of the following informations have been gathered.[1] Sadānanda was born at Bhikāripura, Killā Nayāgaṛa, in the family of an Ōtā Brāhmin. In spite of the attempts of his parents he was a great dunce in his boyhood. When he grew older he felt repentance at his ignorance and prayed to the Çiva Nakulēçvara of Nayāgaṛa. Through his favour he became suddenly inspired with poetical powers. Then he visited Purī, became a disciple of Gaṇgāmātā maṭh, and secured from the Rājā of Purī the title Kavisūryabrahmā. His original name was probably Sādhucaraṇa Dāsa, which was changed to Sadānanda Dāsa after initiation.[2] He next went out on pilgrimage visiting Nabadvīp, Bṛndābana, and other sacred places, and brought therefrom a considerable number of Vaiṣṇavite works. On his return he settled at Bāḷi-ā (more correctly Gōlkuṇḍa) in Parganā Baru-ā. There he became the guru of the young zemindar Abhimanyu and taught him to be a poet. This is acknowledged by Abhimanyu himself in his Prēmakaḷā.[3] Later on however they quarrelled, and

[1] The present Adhikāri Paramānanda Dāsa traces his descent thus :—

Sadānanda
|
Cēlā
Dhrubānanda Dāsa
|
Cēlā
Gōbindacandra Dāsa
|
Cēlā
The present Adhikāri
Paramānanda

[2] This is indicated in the following line—

श्रीगुरु श्री किशोरदास पङ्कज पयार आश्रय करि।
ब्राह्मकुलजन्म मुं साधुचरण दास एथि अधिकारी हे। १९।

Nāmacintāmaṇi 12th Chānda, p. 23.

"Taking refuge at the lotus feet of the *guru*, Çrī-Kiśōra Dāsa, and who was born of a line (hereditarily) sāktas, have I been *adhikāri* here (*i. e.*, in Vaiṣṇaasism)."

[3] गुरु कृपा वरण्यवपदसेवाफळे।
कविकल्पना जनमिला हृदयळे हे। १९।

Abhimanyu is said to have attempted the substitution of his idol for that of his guru. Disgusted (partly from jealousy too), Sadānanda removed his things to Dikṣitapaṛā, and founded the present maṭh. This village is situated on the north of Kēndrāpaṛā canal. The present Adhikāri puts his date roughly at 150 years old. The date seems approximately correct. At the time Prēmakaḷā was written (about 1777 A.D.), Sadānanda was the teacher of Abhimanyu and was probably 30 to 40 years old, nearer 40 than otherwise. Hence Sadānanda was some twenty years older than his pupil, and may be said to have flourished in the third quarter of the eighteenth century.

No large work is attributed to Sadānanda. He composed numerous songs and several small pieces, all dealing with Rādhā and Kṛṣṇa. The tradition is that the songs passing under the name of Aṣṭadurgānātha were really Sadānanda's; he passed them off as Āṭhgaṛa king's, probably for good consideration. The present Adhikāri has supplied me with the following list of his works:—

1. Laharī (ଲହରୀ).
2. Bhāurī (ଭଁଉରୀ).
3. Cāuri (ଚଁଉରି).
4. Tattvataraṇginī, Parts I-III (ତତ୍ତ୍ୱତରଙ୍ଗିଣୀ).
5. Prēmataraṇginī (ପ୍ରେମତରଙ୍ଗିଣୀ).
6. Nāmacintāmaṇi (ନାମଚିନ୍ତାମଣି).
7. Niṣṭhānīḷamaṇi (ନିଷ୍ଠାନୀଳମଣି).
8. Prēmakalpalatā (ପ୍ରେମକଳ୍ପଲତା).
9. Samudra (ସମୁଦ୍ର).
10. Mōhanalatā (ମୋହନଲତା).
11. Bisvambharabihāra (ବିଶ୍ୱମ୍ଭରବିହାର).
12. Pātaradāḅaḷi (?) (ପାତରଦାଣ୍ଡଳୀ).
13. Caitanyabhāgabata (ଚୈତନ୍ୟଭାଗବତ).
14. Curi (?) Cintāmaṇi (ଚୁରିଚିନ୍ତାମଣି).

I have seen only one work of his, Nāmacintāmaṇī (No. 6) and several songs. Caitanyabhāgabata (No. 13) if a poem, is probably an

ଶ୍ରୀମତ ଶ୍ରୀସଦାନନ୍ଦ କବିସୂର୍ଯ୍ୟବ୍ରହ୍ମା ।
କୃପା ଫଳେ ପ୍ରାପତ କବିତ୍ୱମାର୍ଗସୀମା ହେ । ୧୦ ।

MS. Prēma Kaḷā, 1st Ch. Folios 1-2,

"By attendance on the feet of the Guru, Kṛṣṇa and Vaiṣṇavas, the imaginative power of poetry took its birth in my heart. Through the favour of Çrimata Sadānanda Kavisūryabrahmā I have attained the extreme of poetical path."

The Premakaḷā was begun in the author's 20th year, as noted by him later on 1st Ch. l. 111, Folio 4.

adaptation of the same work in Bengali by Bṛndābana Dās. The Nāmacintamaṇi is in 12 Chāndas and in print occupies 23 pages only. Besides praises to Rādhā and Kṛṣṇa, one Chānda (the 3rd) is entirely devoted to Caitanya and his principal disciples. Apparently Sadānanda was a Gauṛiyā Vaiṣṇava. Most extravagant are the praises of Rādhā, who should be named first and then Kṛṣṇa.[1] His songs are among the most popular and are exclusively devotional. But on the whole I think that he is more famous than his works justify. Probably this fame arose from his superior personality and from his extensive knowledge gathered in travel.

Abhimanyu Sāmantasiṁhāra.

The pre-British poets conclude with Abhimanyu Sāmantasiṁhāra. He belonged to a zemindar family, whose descendants still survive. From one of them Babu Raghunātha Sāmantasiṁhāra a good deal of the undermentioned information has been obtained.[2]

The family was founded by one Kāḷu Siṁha. He and his brother Mahābaḷa Siṁha came from Jaypur (Rajputana) to Purī apparently on pilgrimage. They took service under the Rājā of Purī and came to be employed as guards of the king's bed-room (*palaṅkapaharā*). While in this trusted post they secured for themselves the grant of the zemindari of Parganā Baruṣ. On coming to take possession, they found one Ucita Bēhārā already in possession by virtue of an older sanad. Fighting ensued, and at last a compromise was arrived at by a division of the Parganā. The two brothers got seventy-one villages, which are now comprised in the Tāluks Sāntrāpura, Kēsapura, and Rādhāmōhana-prasāda. The two brothers lived together. When Mahābaḷa died, his

[1] ऋषिवचन राधा ये पढ़े बोले कृष्ण नाम आगे बोलि।
सेहि ऋषि ब्रह्महत्या दोष पाए जगि जपिब न भुलि। ४।

Nāma Cintāmaṇi, 5th Ch. p. 8.

"This is the saying of Ṛsis—he who names Rādhā having named Kṛṣṇa first, gets then and there the sin of a Brāhmin-murder. Not forgetting this, watchfully repeat (her name)."

[2] My informant, a fine old man of sixty, died the year before last (1896). He traced his descent from Abhimanyu in this manner:—

Abhimanyu
|
Rāmakṛṣṇa
(son)
|
Raghunātha
(son)
(my informant).

son Jōdhi Siṁha separated taking as his share the Tāluk Sāntrapura. The descent from Kāḷu Siṁha is thus given :—

1. Kāḷu Siṁha.
2. Sāratha Sāmantasiṁhāra (son)
3. Alaṇi Sāmantasiṁhāra (son)
4. Bandōji S. (son)
5. Paramānanda S. (son)
6. Khusāḷi S. (son)
7. Indrajita S. (son)
8. Abhimanyu S. (eldest son) The author.

Of his father and his zemindari, Abhimanyu has given a short description in his Prēmakaḷā.[1] They lived at Gōḷakuṇḍa which is now

[1] जम्बुद्वीप भरतखण्ड ए सार मही।
महोदधि याजनप मध्य रम्य तहिँ ये ॥ १-४ ॥
सुविहारस्थान एपु थिवार से देश।
गोळकुण्ड नामे ग्राम तहिँरे प्रकाश ये ॥ १० ५ ॥
ब्राह्मीनदी से ग्राम सीमा भेदि वहि।
विराट गोधन रहिवार स्थान सेहि ये ॥ १० ६ ॥
ए राज्यरे राजा सिवबंशी चेचोवर।
इन्द्रजित सामन्तसिंहार नाम वर चे ॥ १० ७ ॥
ताङ्क ज्येष्ठ सुत अभिमन्यु नाम मोर।
आडम्बर रीतिरे त सामन्तसिंहार ॥ १० ८ ॥

MS. Prēmakaḷā, 1st Chānda. Folios 3–4.

"In Jambu Dvīpa Bharata Khaṇḍa, this country (Utkaḷa) is the essence. Charming is the town Jājanagara on the seacoast of that country. In this land so well fitted for enjoyment, exists a village by name Gōḷakuṇḍa. By the boundary of this village flows the river Brāhmi ; and its meadows are well suited for immense

situated on the left bank of the Brāhminī river, 20° 42′ lat., and 86° 18′ long. The Jājanagara referred to was the old name of modern Jājapura. The family quarters have now been removed to Bāḷi-ā, a few miles east. The family have lost the zemindari and now live upon 25 *bāṭis* (500 acres) lākhirāj land, with which Abhimanyu is said to have endowed the family idol Rādhāmōhana.

According to local traditions Abhimanyu was precocious in his development, and lisped in number from his very boyhood. In his ninth year he is credited with the composition of doggrels known as Hūgīta, and in his tenth year with other songs, as Jēmā Gīta, Bāgha Gīta, Gōbrācaṛēi Gīta. He then came under the influence of Sadānanda Kavisūryabrahmā and in his twentieth year began his first large poem Prēmakaḷā.[1] I have got a manuscript of this work. He then composed various poems as Sulakṣaṇā, Rasabatī, Prēmacintāmaṇi and Prēmataraŋginī. I have got a manuscript copy of the last. His last work was Bidagdhacintāmaṇi. He intended to finish it in 108 Chāndas with a description of the Rāsalīḷā, but when he had gone up to 96th Chānda, he felt a disgust for this life, turned an ascetic Vaiṣṇava, and abandoning family and home proceeded to Bṛndābana. There he died in his 49th year. The Bidagdhacintāmaṇi has been printed, and in its Preface, his death is said to have taken place on Jyēṣṭha kṛṣṇa saptamī of sana 1213 (=8th June, 1806 A.D., Tuesday). Abhimanyu was well read in Sanskrit classics and rhetorics, and knew Hindī and Mārāṭhī, the speeches of the then governing races. From his boyhood, he loved to associate with Paṇḍits and Sādhus and the accidental residence of Sadānanda helped him materially in developing his poetical powers. He is said to have built a temple to Rādhāmōhana Ṭhākura.

The manuscript Prēmakaḷā is a moderate-sized volume occupying 186 folios with four lines on each page. It is a romance in 64 Chāndas modelled after Upēndra Bhañja's stories. Though begun in the author's twentieth year, it displays considerable knowledge of Sanskrit rhetorics and indicated the future power of the poet. The manuscript Prēmataraŋgiṇī is a small piece based on the Rāsapañcādhyāyī, whose çlōkas are quoted and versified. Of the other poems two are love stories,

herds of cattle. The ruler of this land is a Mitravaṁçī Kṣatriya, by name Indrajita Sāmantasiṁhāra. His eldest son am I, by name Abhimanyu, by surname Sāmantasiṁhāra."

[1] विंश बरष वयसे एहा आरम्भिलि ।
सुजनपदाश्रितरे शङ्काहीन कलि ये ॥ १११ ॥

Prēmakaḷā MS., 1st Ch., Folio 4.

"I began this at the age of twenty, and by attending on the feet of good men dropped my timidity."

Rasabati and Sulakṣaṇā, the initial letters of each line of the latter being *sa*; while Prēmacintāmaṇi is said to be religious.

The last and the best of his poems is Bidagdhacintāmaṇi, based on the Sanskrit Bidagdhamādhava of Rūpa Gōsvāmī the well-known disciple of Caitanya. It deals with the life and love of Rādhā and Kṛṣṇa; while the last four Chāndas poetise the Caitanyite doctrines of *Prēma* and *Bhakti* (love and devotion). The poem is a store-house of rhetorical excellences, almost each Chānda exemplifying a different kind of verbal formations. It thus resembles Kōṭibrahmāṇḍasundarī of Upēndra Bhañja; but it is simpler, less loaded with Sanskrit learning and imageries, and therefore more effective. The author's religious feelings have made the poem less obscene and have induced him to put in graceful verses the rather abstruse doctrines of *Prēma* and *Bhakti*—a field which Upēndra Bhañja did not try. In learning and comprehensiveness he is undoubtedly, inferior to Upēndra; but it may be said for Bidagdhacintāmaṇi that no single Oṛiyā poem contains so many examples of rhetorical skill or abstract poetry as this work does.

Mādalā Pāñji.

Having finished the pre-British period of Oṛiyā poetry, a few words may be added in the conclusion about Oṛiyā prose. Literary compositions in Oṛiyā prose are unknown. The Mādaḷā Pāñji and a few Baṁsābaḷis are the only specimens of prose. These have no literary merits.[1] The Mādalā Pāñji is a sort of chronicle of the Jagannātha temple. Its contents are roughly divisible into three kinds:

(1) A short history of the kings of Orissa (Rājāmānaṇkara Rājyabhōga).

(2) A history of the erection of Jagannātha's temple, its modes of worship, and the duties of its sēbakas.

(3) An account of extraordinary events happening in the temple with the details of their costs, if any.

The historical value of Mādaḷā Pāñji has been very much overrated. The original informations were often not correctly entered. Then again the chronicle being on palm-leaves, it had to be recopied three or four times in a century, and in re-copying many mistakes crept in, particularly in figures. Lastly the *Sēbā* (worship) was closed several times on account of the Mahomedan raids, and many volumes must have been lost at the time. Hence the text is found full of mistakes and cannot be relied upon, unless corroborated by other evidence. The later writers have also fallen into mistakes by following exclusively only

1 The remarks by Mr. Beames on the literary value of the Mādaḷā Pāñji (Vol. II, p. 348) were passed admittedly without any knowledge of their contents.

one version of the royal geneology, while there are five or six versions in the Māḍaḷā Pāñji. The truth often lies in one or other version. Appendix IV. will give some idea of the difficulties in constructing a royal geneology from these different versions.

At present the Māḍaḷā Pāñji is kept in two sets, one by the Sēbaka entitled Dēuḷakaraṇa, the other by the Sēbaka named Taṛha-u. The Dēuḷakaraṇa (*lit.* the writer of the temple) as his name implies, seems to have been the original keeper of the records, but a second was added apparently for check and for better preservation of the informations. It is not known when these records began to be kept. But from the fact that a large number of details dates from the time of Anaṇga Bhīma Dēva, the system would appear to have been established by him. As a rule the later the accounts, the more reliable they are.

N.B.—Since writing this article, a kind letter of Dr. Fleet has drawn my attention to his remarks on the Māḍaḷā Pāñji in the Epigraphia Indica.[1] Dr. Fleet has analysed the earlier list of kings carefully and comes to the conclusion that the annal is "absolutely worthless for any purposes of ancient history." (p. 335). I came nearly to the same conclusion when I was studying the original manuscript of the Māḍaḷā Pāñji. In an article read before this Society, an abstract of which was published in the Proceedings for July 1892, I noticed the general unreliability of the historical portion of the Māḍaḷā Pāñji, and remarked that at best it can be used only as a corroborative document. Dr. Fleet's analysis confirms me in that view.

On some of the points discussed in the very interesting article of Dr. Fleet, I venture to differ. Firstly, he thinks that in respect of most of the Kēçarī kings it can only be said that "not one of them has any ring of antiquity in the sound of it; they may possibly be real names of later rulers, misplaced in order to make out a consecutive chronological series." (p. 336). I know at least of one Orissan inscription not later than tenth century, which mentions Kēçarī kings. It is the Brahmēçvara inscription of Bhuvanēçvara.[2] This inscription mentions Udyōtaka Kēçarī, and of his ancestors Janamējaya, Vicitravīra, Caṇḍihara and Kōḷāvatī. The names of both Janamējaya and Kōḷāvatī are to be found in the Māḍaḷā Pāñji. The Kēçarī kings need not therefore be considered as myths or later rulers, as suggested.

Secondly, Dr. Fleet has "no substantial doubt that the Yavana invasions which were repulsed, as the annals say, by Vajradēva and his

1 "The Records of the Sōmavaṁçi kings of Katak." Ep. Ind., Vol. III., pp. 334–340.

2 Prinsep, Journ. As. Soc. Vol. VII., p. 558 *et. seq.*; I. c. Dr. R. L. Mittra's Antiquities of Orissa, Vol. II. pp. 88-9.

successors, and the successful invasion by the Yavanas, in the time of Çōbhanadēva, are (mixed up with the early Gupta rule) simply the raids into Orissa by the Mussulmans in the thirteenth and following centuries, and the ultimate conquest of the country by them in the sixteenth century A.D." (p. 339). After having so satisfactorily established the utter worthlessness of the earlier part of the annals, it is a pity that Dr. Fleet should make such an elaborate inference on one of the least authentic events of that earlier part. I am inclined to disbelieve the whole story of Raktavāhu the Yavana, as a legend without any historical value. If any identification be at all required, I would rather identify him with some Buddhist or Jaina chief of the South.

Lastly, Dr. Fleet thinks that Çivagupta and his descendants were kings of a dominion which included "probably the whole of Orissa," and who had their capitals at Kaṭaka (p. 327). This conclusion does not appear to be borne out by the facts. The epithet "Trikaliṅgādhipati" is merely an honorific title, just as the old kings of Orissa used to style themselves "kings of Gauṛa and Karṇāṭa" without having the smallest bit of land in those countries. The word Kaṭaka should be taken as a common noun denoting "camp;" the old name of modern town Kaṭaka being "Bārāṇasi Kaṭaka."[1] Of the six copper-plates, five have, no doubt, been found near modern Kaṭaka; but this is probably due to the fact that the donees lived there or subsequently came to live there. Many Oṛiyā Brāhmins living near Kaṭaka and Puri still hold lands in the eastern part of Central Provinces, or in the northern part of Madras Presidency. The sixth copper-plate was found in Pāṭnā in the Central Provinces, and does not support the theory of Orissa kingship. The river Mahānadī has been mentioned in copper-plates E. and F., but that river flows as much through the Central Provinces as through Orissa. The villages in which the lands were granted cannot be traced in Orissa; while many of them have been specifically mentioned in the grants to have been in Kōsala or Dakṣiṇa-Kōsala. The kings also are specifically mentioned in the inscriptions as "Kōsalēndra." The inscriptions are not earlier than the 11th and belong more probably to the 12th Century A.D.; and at that time the Gaṅgavaṁça kings were ruling in Orissa, as a series of inscriptions have proved beyond doubt. All these facts and a careful reading of the grants lead me to the conclusion that Çivagupta and his descendants were really kings of Kōsala or Dakṣiṇa-Kōsala (identifiable with the N. E. part of Central Provinces),

[1] J. A. S. B. Vol. LXII., 1893, pp. 100-1; the other inscriptions in this article show how the word "kaṭaka" was used in old days; Vol. LXIV, 1895, p. 134.

and that the lands in the plates B to F. were granted to Brāhmins who either resided at the time in Orissa or subsequently came to reside there.

Appendix III. Bhūpati Paṇḍita's account of Himself.

ए पथे परम आनन्दे। क्षणाचरण अरविन्दे ॥
एमन होइला मधुप। वैष्णव दास कवि भूप ॥
पश्चिम विप्र सारस्वत। नाम ये भूपति पण्डित ॥
श्रीगजपति गौड़ेश्वर। उत्कळ देश्वर ठाकुर ॥
ये नव कोटि कर्णाटक। क्षावर देश्वर नायक ॥
ए आदि लोक चतुर्दश। पुरित याहार सुयश ॥
जगन्नाथङ्क क्षत्र शिरे। एणु ए वड़ जगतरे ॥
पूर्व्वे ए ओड़िशा राज्यर। श्री इन्द्रद्युम्न नृपवर ॥ २०० ॥
ताहाङ्क आज्ञा परमाणे। ब्रह्मा अइले ए भुवने ॥
ब्रह्मा मानिले आज्ञा यार। इतर जन केउँ छार ॥
एहाङ्क शिरे साढ़ि देइ। एटि प्रत्यक्षे विष्णुदेहि ॥
ए वीरवर वइष्णव। नाम श्री दिव्यसिंह देव ॥
लक्षे राजाङ्क चूड़ामणि। सुन्दरपणे अग्रे गणि ॥
कन्दर्प सम नोहे रूपे। पृथिवी पूरित प्रतापे ॥
पण्डित धामक विवेक। सङ्गीत विद्या सुरसिक ॥
मदन शास्त्र अनुभवि। श्रीकृष्णरस वाक्य कवि ॥
प्रजापाळन विप्रभक्त। दयाळु दाता परहित ॥
एते लक्षणे से राजन। ताहाङ्कु करि दरशन ॥ २१० ॥
कीर्त्ति कवित्व वर्णिवार। शुणि सन्तोष नृपवर ॥
धनवसन भूमि दान। देले से होइ सुप्रसन्न ॥
देखि अनुग्रह विशेष। छाड़ि अइलि निज देश ॥
ताहाङ्क अन्नजळ खाइ। सुखे ताहाङ्क राज्ये याइ ॥
कटक नाम रथिपुर। नगर पश्चिमे मो घर ॥
पश्चिम भाषारे कवित्व। वङ्गळा भाषा विरहित ॥
उत्कळ भाषा नवशिछा। मोहर वइष्णव दीक्षा ॥
श्री व्रज राजेन्द्र कुमर। किशोर क्षण वेणुधर ॥

ताहाङ्कु शाखा भावे भजि । निर्म्मळ प्रेमे मन रञ्जि ।
श्री कृष्णचरणे विश्वास । नाम श्री चइतन्यदास ॥ २२० ॥
महत शुद्ध वइष्णव । गोपीका भक्ति ताङ्क भाव ॥
श्रीपुरषोत्तमरे घर । शुद्ध पश्चिम पाखर ॥
पूर्व्वे से कपाळमोचन । पश्चिमे लेकेश्वर स्थान ॥
ए दुइ शिवङ्क मध्यर । मठ चइतन्य दासङ्कर ।
ताहाङ्क सङ्गे मो पौरति । ताहाङ्क इष्ट गोपीपति ।
आज्ञा होइला ताहाङ्कर । उत्कळ भाषा वाक्य कर ॥
चौतिषा चउपदी गीत । वर्ण्ण हो गोविन्द चरित ।
ताहाङ्क आज्ञा घेनि शिरे । मन श्रीकृष्ण चरणरे ।
सुधासमुद्र पूरि थाइ । थेगट पूराइ खग नेइ ।
तदव गोविन्द चरित । चौतिषा चउपदी गीत ।
करइँ बुद्धि अनुसारे । शुणाइँ ताहाङ्क कामुरे । २३० ।
से पुणि ऊअन्ति प्रसन्न । आनन्दे दयन्ति आलिङ्गन ।
ए रूपे कृपा ताहाङ्कर । एटि दुर्ल्लभ लाभ मोर ।
श्रीदिव्यसिंह राजाङ्कर । समस्त अठर अङ्कर ।
मकर मास शुक्लपक्ष । तिथि त्रयोदशी प्रत्यक्ष ।
गोधूळि सोमवार दिन । ए ग्रन्थ होइला सम्पूर्ण ।
ए दश अध्या पदयुक्त । दुइ सहस्र नव शत ।
अधिक सपत तिरिश । ए प्रेम पद्यामृत रस ।
येवे तो ब्रह्मज्ञाने मन । ए ग्रन्थ करहे पठन ।

Prēmapañcāmṛta, 10th Adhyāya, pp. 122–23.

Appendix IV.

The Later Kings of Khōrdā.

Considerable confusion exists regarding the times of these kings, and the confusion has arisen partly from the peculiar nature of the Oṛiyā aṅka and partly from relying on one version alone of the Mādaḷā Pāñji. The Oṛiyā aṅka omits several years and begins in bhādra; but hitherto it has been taken as an ordinary year. The Mādaḷā Pāñji, furthermore, gives several versions of the royal genealogies. Of these one has been followed by Mr. Stirling, which will be called A;

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another (to be called B) is followed in Bābu Bhabānī Charaṇ Bandyōpādhyāya's Puruṣōttamacandrikā and adopted in Hunter's Orissa (Vol. II, App. VII, pp. 183–191); while a third which I shall call C is still unpublished. The C version is incomplete taking the genealogy up to Gōpīnātha Dēva only, but otherwise appears to have been generally more reliable.

I. Divyasiṁha Dēva.

(1692/93–1719/20 A.D.).

His time is important for Oṛiyā literature, as three poets,—Upēndra Bhañja, Bhūpati Paṇḍita and Bisvanātha Khuṇṭiā mention him. The king's initial year appears to be 1692–93 A.D., and for several reasons. Firstly, A puts it at 1692 A.D. Secondly, Bhūpati Paṇḍita's poem was finished in his 18th Aŋka, makara çukla trayōdaçī, Monday. On calculating according to Prof. Jacobi's Tables, makara çukla trayōdaçī fell on Monday in the year 1707 (3rd February). This being the king's 18th aŋka or 15th year, the first year falls in 1692–93. Thirdly, reasonings from Mahomedan chronicles support this date. During this reign Aurangzēb sent orders to break the temple and the image of Jagannātha:—

"He (Mīr Sayyid Maḥmūd of Bilgrām) was a man held in great respect and had served under Nawāb Ikrām in Orissa. When Aurangzēb had sent orders to the Nawāb to destroy the temple of Jagannāth, Raja Durup Sing Deo who had the temple under him asked the Mīr to introduce him to the Nawāb. The Raja promised to break up the temple and to send the big idol to the Emperor. He actually did break the statue of Rakas which stood over the entrance of the temple, and also two battlements over the door. The idol which was made of sandalwood and which had two valuable jewels set in the eyes, was carried off and sent to Aurangzēb at Bijapur where it was thrown by order on the steps of the mosque."[1]

1 Tabṣirat-ul-Nāẓirīn, l. c. Dr. R. L. Mittra's Ant. Orissa, Vol. II, p. 112. The breaking of the temple is corroborated by Mādaḷā Pāñji (C version):—

"(अ७ङ्क) रिसभ दि १९ ने एदिन देवविभा एइ दिन पातीसा अउरङ्ग साहाङ्क नवाव एकराम खाँ एहाङ्कठारु अइला एहा भाइ सरमण्ड खाँ यमाउला एसङ्गते इमाम कोळि असुआर गो ५० टा घेनि। राया दिव्यसिंह देव वारुलागि होइथिले देउळ सिंहद्वार गुमुट भाङ्गिले भोगमण्डपरु चक्र नेले काठर यगनाथ प्रतिमाकु मुगल नेले देउळ सिंहासन उपरकु नवाव भाइ गला देउळ सिंहद्वार दखीण द्वार मुदागला"

The event thus described took place on 19th ṛsava, 7th Aŋka of the king Divyasiṁha Dēva, being 17th May in 1697 A.D.

Aurangzēb was at Bijapur in 1697 A.D., conducting the war against the Marhattas.[1] As quoted in the note 1 of page 381, the image was taken away in the 7th aṅka of the King Divyasiṁha Dēva. Hence his 7th Aṅka or 5th year fell in 1696/97 A.D., and his 1st year in 1692/93 A.D. According to C, Divyasiṁha was crowned on Bichā 23rd, equal to 22nd November 1692, (*vide* Prof. Jacobi's Tables).

According to C, Divyasiṁha Dēva ruled for 34 Aṅkas or 27y. 5m. 11d. That he reigned for more than 33 Aṅkas is corroborated by an Oṛiyā inscription found by me on the wheel at the top of Jagannātha temple. The Inscription contains the following entry among others :—

"श्रीद्विवसिंह देव माहाराजाङ्क त्रय़स्त्रिङ्क मकर दि २८ न श्रीनीळचक्र नीचार चोर विजे होइले" The blue wheel was made and put (on the top), on makara 28th, 33rd Aṅka of Çrī-Dribasiṁha Dēba Māhārājā.

The 33rd Aṅka or 27th year takes us to 1718/19 A.D., and its makar 28th was 26th January in 1719 A.D., (*vide* Jacobi's Tables). Dibyasiṁha Dēva was therefore reigning in 1719 A.D. According to C, he died next year on mēṣa 31st (34th Aṅka), or 28th April 1720 A.D. (*vide* Jacobi).

II. Harēkṛṣṇa Dēva.

(1719/20–1724/25 A.D.)

Divyasiṁha was succeeded by his brother Harēkṛṣṇa, whose reign is put by A. and B. at 5 years and by C. at 7 Aṅkas or 4y. 10m. 20d, (3 put in C by mistake for 4). All the versions therefore agree. He died on mina 19th, 7th Aṅka (*vide* C.) which according to Jacobi's Tables would be 18th March in 1725 A.D. The father of Gadādhara Rāyaguru (the author of Sanskrit Ācārasāra) was *guru* of this king.

III. Gōpīnātha Dēva.

(1724/25–1731/32 A.D.)

Harēkṛṣṇa was succeeded by his son Gōpīnātha, with whose accession C. ends. Both A. and B. agree in putting his reign at 7 years. That he reigned for more than six years is corroborated by an account in the Madaḷā Pāñji. During this reign the accidental sitting of an owl on the Jagannātha's image necessitated an extraordinary purification with three baths. The event took place on Makar kṛṣṇa trayōdaçī, Monday, 8th Aṅka of Gōpīnātha Dēva. Makara kṛṣṇa 13 fell on Monday in the year 1731 A.D. (25th January). Gōpīnātha Dēva was therefore reigning in 1731 A.D.

1 Elphinstone's Hist. Ind., p. 662 (Ed. 1889).

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IV. Rāmacandra Dēva II.

(1731/32—1742/43 A.D.)

This king was son of Gōpinātha. According to A., he reigned 16 years; according to B. 11 years. B's statement appears more reliable, because the reigns of this king and of his two successors amount to 66 years, and the next following king (Makunda Dēva) began to rule in 1797/98 A.D., as I shall show hereafter. Hence Rāmacandra's 1st year falls in 1731/32 (or 1797/98—66) exactly as calculated from his father's reign. But A's total 71 would put his 1st year further back to 1726/27 A.D., which does not agree with the calculations from the reigns of the preceding kings. Rāmacandra Dēva was unfortunate. He was defeated and taken as prisoner to Kaṭaka under orders of Shujā-ud-din, the Bengal Governor. At Kaṭaka he married a Mahomedan lady and died.

V. Vīrakiṣōra Dēva.

(1742/43—1779/80 A.D.)

Vīrakiṣōra succeeded his grandfather as a child. According to A,[1] the Marhattas conquered Orissa and drove out the Mughals in his 5th Aŋka or 4th year. This dispossession of the Mughals took place towards the end of the rains in 1745 A.D.[2] The 4th year being 1745/46 A.D., the first year naturally falls in 1742/43 A.D. According to A. he ruled 43 years; and according to B. 37 years. For reasons stated under Rāmacandra Dēva and under the next kings I have accepted B's figures as more reliable. Vīrakiṣōra was reigning in 43rd Aŋka or 35th year as an Oṛiyā sale-deed testifies.[3] The king's rule was nominal being disturbed by Mughals and Marhattas.

VI. Divyasiṁha Dēva II.

(1779/80—1797/98 A.D.)

This king was grandson of Vīrakiṣōra. His reign is put by Mr. Stirling at 12, and by B. at 18 years. The former is wrong because A. which Stirling followed, really shows 18 and not 12; and because Stirling himself has translated an Oṛiyā sale-deed dated 17th Aŋka or

1 "ए राजाङ्क अइङ्करे मरठाएं आसि मुगलकु उठाइ देले।
कटक अमळ कले। मुगलबन्दि दखल कले।"

2 Stewart's Hist. Beng. (1847), p. 293. "Ragojee accordingly encamped in Beerbhoom and reduced the province of Cuttack and most of Burdwan, by his detachments."

3 Toynbee's Orissa, App. p. XXXIII.

14th year of this king.[1] He used to pay tribute to the Marhattas, and had little of royal power even in his own territory that corresponded with the present Khōrdā subdivision plus Parganā Lēmbāi.

VII. Makunda Dēva II.

(1797/98—1817 A.D.)

Stirling places the accession of this king in 1798 A.D., and as he was a contemporary of the king his opinion carries weight. This is borne out also by two facts. According to A. the British conquered Orissa in this king's 9th Aŋka, and captured and imprisoned the Rājā in his 10th Aŋka or 8th year. The British forces captured the Fort Bārabāṭi in Kaṭaka on 14th October 1803, while the Rājā himself was captured the next year in November 1804.[2] Hence the 1st year of the king falls in 1797–98 A.D. The Rājā was released subsequently. But in 1817 on account of the rebellion of Khōrdā pāiks he was recaptured and put into the prison at Kaṭaka. There he died on 30th November 1817 A.D.[3] in his 24th Aŋka or 19th year.

Appendix V.

Gumusara royal Geneology.

ए हाङ्कु (वनमालि भञ्जकु) मारि ए हाङ्क भाइ गोपिनाथ भञ्ज रायुत कले १५५८ सकाब्द ग्रारिकि व २२ षं। १५४१ ग्रकाब्दरे गोपिनाथपुर ग्रासन कले। ए हाङ्क पूत्र बड़ धनञ्जय भञ्जे १ गोविन्द भञ्ज पाटरजा २ बलभद्र छोटरा ३ निधि भञ्ज सान्तसिंहारे ४। ए चारि पुत्र ताङ्कर होइथिले। ताङ्क भितरु बड़ पुत्र धनञ्जय भञ्ज राजत्व कले। ए राजत्व कले ओ राजत्व करिवारे घाठी ए हयार टङ्का लगाइ जगतो गोटिए तीयार करिथिले। खटदोळी वाङ्गिया रतन जड़ित करि तीयार करिथिले। ए हाङ्कर विशेष महादेइ नाचुणि करिथिले। ए वड़ भोगि। ए माइपि कुचमर्द्दन ऊच्यन्ति। ए राज दुइ घड़ि थाए सरुचकुळि दुध योगणा करन्ति। ए रजा धनञ्जयपुर ग्रासन १५७८ ग्रकाब्दरे कले। एहिपरि यज्ञमानङ्कु करि राजत्व करिवारे ए राजत्व कले १६२३ ग्रकाब्द ग्रारिकि व ६५ षं। एथकु १६१६ ग्रकाब्द ग्रारिकि पेश्मकेशि काहाकु देवार न थिला। १६१७ ग्रकाब्द ग्रारिकि मुगलाइ नवाव ग्रासिवारे एक वर्षकु ट ५००० टङ्का पाइ हयार टङ्का लेखाए पेश्मकेशि मूळ कले। से दिन ठारु पेश्मकेशि देवार

1 Toynbee's Orissa, App. p. XXXIII.
2 Toynbee's Orissa, pp. 4-5; Hunter's Orissa, Vol. II, p. 58.
3 Toynbee's Orissa, p. 21.

हेला। एहाङ्क पुअ राउतघर नाति वड़ गङ्गाधर पाट कुमारे। जुड़ु मुळार नाती हरिप्रसाद भङ्गे। एहाङ्क पद धन्ताकारी वड़जेना। धरा कोट घर नाति विष्णुनाथ मङ्गराजे। वड़म्बा हाड़ देइ पाट महादेइङ्क पुअ। निळकण्ठ भङ्गे।१।

विक्रम भङ्गे। २। प्रताप भङ्गे। ३। खण्डपड़ाधर नाति गदाधर भङ्गे। १। प्रान्त सिंहारे। २। खलिकोटघर नाति। गिरिधर भङ्गे। १। सदाशिव भङ्गे। २। वाउरि भङ्गे। ३। भमर वरे। १। राउत घर नाति। अर्ज्जुन भङ्गे। २। एरूपे तेर पुअ नाचुणी पुअ पाच गोटी। एरूप अठर पुअ। एहाङ्क राजत्वरे ए गुमुग्गरकु अश्वत्थमा गोपनीय वेग्गरे आसि थिले। ताङ्क तेजरु राजा महापुरुष वोलि जाणि ताङ्कठारे भक्ति कले। ताङ्कु पचारिले आम्भ उतारु गुमुग्गरे किये राजत्व करिव। पचारिवारु तहिंकि से कहिले। तुम्भ पुअमानङ्कु राजत्व नाहिं। तहिं उत्तारु गोविन्द भञ्ज थाट रजाङ्क पुअ। रघुनाथ दक्षिणर ये। घन भङ्गे। चन्द्र शेखर श्रीचन्दने। जदु भमर वरे। ग्रामसुन्दर विधारे। मकुन्द भङ्गे राज्यापितामे। एरूपे ताङ्कर छपुअङ्कु देखिले। एहाङ्कु देखि वोइले काहाठारे राजचिह्न नाहिं। धनिया उत्तारु गोविन्द भञ्ज थाट रजाङ्क पुअ धनिया हेव। एपरि से कहिवारु ताहा मनरे रखिथिले। धनञ्जय भञ्ज राजभोग इच्छारे रहि भाइ गोविन्द भञ्ज थाट रजाङ्कु मुलुक वेमार समर्पण करि थान्ति। ए समयरे शुआगि महादेइ हाड़ुदेइङ्क ठारे रजाङ्कर वड़ स्नेह थाए। से महादेइ पुअ नीळकण्ठ भञ्जङ्कु साड़ी देव वोलि कऊथान्ति। गङ्गाधर पाट कुमारङ्क ठारे गोविन्द भञ्ज थाट रजाङ्कर छपुअ प्रीतिकरि थान्ति। हाड़ुदेइ ताहा शुणि रजाङ्क ठारे विमन करि खच कहिले। गोविन्द भञ्ज थाट रजाङ्कु छपुअ समेतरे राज्यरु अन्तर कराइ देले। से गोविन्द भञ्ज थाट रजा पाच पुअङ्कु घेनि ओड़ीशा वाहारि गले। घन भङ्गे धराकोट जमिदारी स्थलरे रहिले। एउतारु रजा वहुत काळ जीइँवारु हाड़ुदेइ विचारिले। एत वहुत काळ राजत्व कले पुअ मोर रजा होइ न पारिला। एमन्त दुर्वीचार करि चम्पा नानि हाते दुध सरचकुळी खाइवारे सेथिरे विष दिआइले पुअ नीळकण्ठ भञ्जङ्कु वापङ्कु ए समयरे अपाय विचार कर वोलि कहि देले। नीळकण्ठ भञ्ज ताहा जाणि वापङ्कु माइले। वड़ भाइ पाट कुमारङ्कु राज साड़ी वान्धिवि आस वोलिवारु से भयरु कवाट किळि रहि घरु न वाहारिले। ताङ्क घर कवाट चिरि ताङ्कु धरि हाणि पकाइले। ताहाङ्क पुअ सञ्जय भञ्ज पाखेरि चिरि पळाउथिले। दन्ता दया वोलि वालेक काण्ढ विंधिवारु काण्ढ वाधिवारे पड़िवारु वेढ़ीकरि हाणी पकाइले। ए सञ्जय भञ्जङ्क

भार्य्या गर्भ होइथिले। ताहाङ्कु नेइ बन्दि करि रखी नीलकण्ठ भञ्जे राज्यत कले १६२५ शकाब्द सरिकि व २ र्ष। ए भितरे धराकोटरे थिवा घन भञ्जे शुणीले। तोनि पुरुष मारि नीळकण्ठ भञ्जे राधा हेले बोलि। से खबर शुणी घन भञ्जे करड़ामाळकु शुत्र करि करड़ामाळरे प्रवेश हेले। सेठारे रहि करड़ा माळुआ लोकङ्कु पठोआइ बन्दिरे थिवा सत्रुजय भञ्जङ्क भार्य्या मणादेइङ्कु आसिना माघि पर्व उच्छव गइळरे कुलाड़ गड़ठारु चोराइ घेनि गले। ताङ्कु नेइ बारबारे रखाइले। सेठारे ताङ्कर रणभञ्जो बोलिबार पुअ गोटी-ए यन्म हेले। से पुअङ्कु घन भञ्ज घेनि राजवंस पुअ ए बोलि समस्त माळ कन्दङ्कु देखाइ ताङ्कु आएत्त करि लश्करु तसकर घेनि नीळकण्ठ भञ्जङ्क उपरे फेवर लगाइले। ओड़ीश्यारे थिवा घनभञ्जङ्क बापे गोविन्द भञ्ज घाट रजा ए दीगरु लश्कर धरि नुआगां गड़ जमिदारिकु आयत्त करि अमाइतङ्कु आयत्त करि विशेष लश्कर धरि ए दिगरु घेर देले। एपरि दुइ आड़रे घेर देखि नीळकण्ठ भञ्ज रहि न पारि राज्य छाड़ि बाहारि गले। से बाहारि थिबारु रणभञ्जङ्कु राजधानिरे बसाइ गोविन्द भञ्ज घाट रजा बेभारक होइथिले ए १६२९ शकाब्द शरिकि व ०४ र्ष।

MS. Gumusara Bamsābali.

INDEX

TO THE

JOURNAL OF THE ASIATIC SOCIETY OF BENGAL,

Vol. LXVII, Part I.—1898.

'Abdu-l-lāh Khān, 142 ff.
'Abdu-l-lāh Sulṭānpūrī, 314.
'Abdu-ṣ-ṣamad Khān, 156.
Abhimanyu Sāmantasiṁhāra, Oṛiyā poet, 373 ff.
Abū-l-faẓl, used Memoirs of Bāyazīd Bīyāt, 287, 302.
Acyutānanda Dāsa, author of Oṛiyā version of Harivaṁça, 348.
Adham Khān, 313.
Afrāsiyāb Khān, 154.
Āghā Sarw-qad, 314.
Aḥmad Bēg, *see* Ghāzīu-d-dīn Khān.
Aibak, n. of a place, 304.
Akbar, lives in Kābul as a child, 298.
———, circumcision of, 299.
———, lessons of, with Mullā Ḥisāmu-d-dīn, 306.
———, resides at Jalālābād, 307.
———, ices, grapes, etc., brought to him from Kābul by Bāyazīd Bīyāt, 308.
———, releases Muzaffar 'Alī Tarbatī, 311.
———, game of cards at his court, 311.
———, cock-fighting at his court, 312.
———, religious disputations at his court, 314.
'Alī Qulī Shaibānī, neighbour of Bāyazīd in Tabrīz, 296, 309.
Amīnu-d-dīn Khān, 144 ff.
Amīnu-d-dīn Sambhalī, 155.
Anaṇgabhīma I. of Orissa, mentioned in Cāṭēçvara Inscription, 319, 320, 325.
Anaṇgabhīma II. of Orissa, inscription of, in the Cāṭēçvara Temple, 317 ff.
Āryadēva, Sanskrit work of, discovered in Nepal, 175 ff.
Asad Khān, 142 ff.
A'ẓam Shāh, 152.
Bābar, reference to inscription made by him, 302.
Bahādur Shāh, 152.
Bahrām Saqqā, 311.
Baharlū, *see* Bairām Khān.
Bairām Khān, 298.
Bakhshī Bānū, daughter of Humāyūn, married to Mirzā Ibrāhīm, 306.
Bala, *n. pr.* of a *bhikṣu* in Set Mahet Inscription, 278, 280.
Baladēva, *n. pr.* of a Brahmin in Sualkuci grant, 123, 124.
Baḷarāma Dāsa, author of Oṛiyā version of Rāmāyaṇa, 344 ff.
Balavarman, king of Assam, 103.
Banamāḷi Dāsa, 336.
Band Kushā, name of a place in Badakhshān, 302.
Bāpūs Bēg, 299.
Bast, name of a castle on the Hilmand, 298.
Bāyazīd (Bajazet) Bīyāt, memoirs of, 296 ff.
Beveridge, H., article by, on the memoirs of Bāyazīd (Bajazet) Bīyāt, 296 ff.
Bhāgavata Purāṇa, Oṛiyā version of, 339 ff.
Bhaktacaraṇa Dāsa, an Oṛiyā Poet, 360.
Bhānumitra, coins of, 137.
Bhāskara, a poet who composed the Cāṭēçvara Inscription, 324, 327.
Bhīls, notes on their language, 187 ff.
Bhōja I., Inscription of, from Marwar, 291 ff.
Bhūmisparçamudrā, meaning of, 285.
Bhūpati Paṇḍita, Oṛiyā poet, 361, 379 ff.
Bisvanātha Khuṇṭiā, Oṛiyā poet, 368 ff.

Bloch, T., article by, on an ancient inscribed Buddhistic statue from Çrāvastī, 274 ff.
———, article by, on a new Inscription of Mahārāja Bhōja I., from Marwar, dated Harṣa Samvat 100, 291 ff.
Bōdhisattva, inscribed statue of, from Set Mahet (Çrāvastī), 274 ff.
———, statues of, as distinguished from Buddha images, 280 ff.
Buddha, images of, on coins, 135.
———, inscribed statues of, 281.
———, statues of, as distinguished from images of Bōdhisattvas, 281 ff.
Brahmapāla, king of Assam, 103, 108, 111 114.

Caghatāi Sulṭān, chronogram of his death, 300.
Caitanya, visit to Orissa by, 333.
Çālastambha, king of Assam, 103, 108, 114.
Çaṇkarācārya, 20 ff.
Cap, worn by Buddhist monks in Tibet, 27.
Cards, game of, in Akbar's time, 311.
Cāṭēçvara (*i.e.*, Çiva), temple of at Kisnapur, Cuttack, 317 ff.
Çāvastī, *i.q.*, Çrāvastī, 278, 279.
Chakravarti, M. M., article by, on the date of the Jagannātha Temple in Puri, 328 ff.
———, article by, on the language and literature of Orissa, Parts III and IV, 332 ff.
Chittagong, antiquities of, according to Tibetan books, 20 ff.
Cīn Qilīc Khān, 157.
Çivadāsa, *n. pr.* of a *Çrēṣṭhī* in Inscription of Huviṣka, 276, note 2.
Çivagupta, king of Orissa, 378.
Cock-fighting, account of, at Akbar's court, 312.
Cōḍagaṇga, erected the temple of Jagaunātha in Puri, 329.
———, mentioned in Çāṭēçvara Inscription, 319, 320, 324.
Çōḍāsa, Kṣatrapa of Mathura, Inscriptions of, 275.
Coins of Bhānumitra, 137.
——— Hermaeus, 134.
——— Huviṣka, 136.
——— Kadaphes, 135.
——— Kadphises I., 133.
——— Penkelaus, 131.
——— Taraki (Satrap), 133.
——— Telephus, 130.
——— Tōramāṇa, 139.
——— White Huns, 139.
Crāvastī, modern site of, 285 ff.
———, name of a *bhukti* and *maṇḍala* in Inscriptions, 289.
Çrībhadra, 25.
Çrī-Hariṣa, king of Assam, 103.

Das, S. C., article by, on the antiquities of Chittagong from Tibetan sources, 20 ff.
———, article by, on the Identity of the great Tsang-po of Tibet with the Dihong, 126 ff.
———, article by, on travels on the shores of Lake Yamdo Croft, 256 ff.
Dāūd Khān Paunī, 157.
Dēṇḍvānaka, name of a *viṣaya* in Marwar plate of Bhōja I., 292, 293, 294.
Dēvadatta, name of a Brahmin in Baragaon plates, 111, 119.
Dēvaçakti, Mahārāja, mentioned in Marwar plate of Bhōja I., 293, 294.
Dharmakīrti, 21.
Dharmarakṣita, 20.
Dihong, course of, 126 ff.
Dinakṛṣṇa Dāsa, Oṛiyā poet, 356.
Divyasiṁha Dēva I., king of Khorda, 381.
Divyasiṁha Dēva II., king of Khorda, 383.

Faiẓu-l-lāh Khān, 155.
Farkhunda Bakht, 156.
Farrukhsiyar, history of his reign, 141 ff.
———, embassy to, from Calcutta, 168.
Fidā Khān, 155.

Gandhara, reference to, in Ou-kong's Itinerary, 14.
Gaṇgadatta, name of a Brahmin in Bāragaon grant, 112, 119.
Gaur, head-quarters of Mun'im Khān, 315.
Ghāziu-d-dīn Khān, personal account of, 161 ff
Ghulām 'Alī Khān, 155.
Grierson, G. A., article by, on the Kāçmirī Noun, 29 ff.
———, article by, on a Dialect of Gujarātī, discovered in the district of Midnapur, 185 ff.
———, article by, on Primary Suffixes in Kāçmīrī, 193 ff.
———, on Secondary Suffixes in Kāçmīrī, 221 ff.
Gōpālakṛṣṇa, 336.
Gōpīcandra, 22 ff.
Gōpīnātha Dēva, king of Khorda, 382.

Gōvinda, name of a Brahmin, minister of Anaṇgabhīma I., 319, 321, 325.
Gujarātī, dialect of, spoken in Midnapur, 185 ff.
Gumusara, name of a royal family in Ganjam District, 362, 384.
Gurjjaratrā-bhūmi, name of a district in Marwar plate of Bhōja I., 292, 293, 294.

Haidar Qulī Khān Isfarāinī, 157.
Ḥaram (*or* Khānam) Bēgam, wife of Mīrzā Sulaimān of Badakhshān, 306, 310.
Harēkṛṣṇa Dēva, king of Khorda, 382.
Harivaṁça, Oṛiyā version of, 347 ff.
Harjara, king of Assam, 105.
Harṣacarita of Bāṇa, quotations from, in Ratnapāla's Inscriptions, 105.
Harṣuka, *n. pr.* of a Brahmin in Marwar plates of Bhōja I., 292, 295.
Hēmū, 309.
Hermaeus, coin of, 134.
Hindū Kush, name of, changed by Akbar to Hindū Kōh, 306.
Hoernle, A. F. R., article by, on two Copper-plate Grants of Ratnapāla of Prāgjyōtiṣa in Āsām, 99 ff.
Humāyūn, arrives in Sistān, 297.
——·——, stays at Mashhad, 298.
——·——, proceeds towards Afghānistān, 298.
——·——, enters Kābul, 299.
——·——, goes to Badakhshān, 301.
——·——, meets Mīrzā Kāmrān in Badakhshān, 301.
————·, drinking party of, 301.
————·, attacks Balkh, 302 ff.
————·, goes to Pariān, 303.
————·, inscription of, 303.
————·, marches towards Aibak, 304.
————·, defeat of, by Kāmrān, 305.
————·, retreat of, from Balkh to Kābul, 305.
———— ·, Negotiation of marriage of, to Shāhzāda Khānam, 306.
————·, two sons born to him in 960, 308.
Hurricane, at Agra, in 968, 312.
Ḥusain 'Alī Khān, 151.
Ḥusain Qulī, 302.
Huviṣka, coins of, 136.
————, inscription of, 276, note 2.

'Ibādu-l-lāh Khān, 148, 149, 155; *see also* Mīr Jumlah.
Ikhlāṣ Khān, 143 ff.
'Ināyatu-l-lāh Khān, 155.
Inscription of Anaṇgabhīma II. of Orissa in the Cāṭēçvara temple, 317 ff.
———— Bhōja I. from Marwar, 291 ff.
———— Çōḍāsa, 275.
———— Huviṣka, 276, note 2.
———— Ratnapāla of Prāgjyōtiṣa, from Bāragaon, 99 ff.
———— do., from Sualkuci, 120 ff.
———— on pedestal of Statue of a Bōdhisattva from Set Mahet (Çrāvastī), 274 ff.
———— in corrupt Sanskrit written in Tibetan characters, from Pema-koi, 128.
———— Turkish, from Orkhon, 13 ff.
———— written in unknown characters, from Swat and Boner, 1 ff.
Irvine, W., article by, on the later Mughals, 141 ff.
Islām Khān, 154.
'Iwaz Khān, 157.

Jabār Bardī Bēg, 313.
Jagannātha, temple of, in Puri: its date, 328 ff.
Jagannātha Dāsa, author of Oṛiyā translation of the Bhāgavata Purāṇa, 339 ff.
Jahāndār Shāh, 142 ff.
————————, death of, 149 ff.
Jalālābād, chronogram of its building, 307.
Jalālu-l-dīn Maḥmūd of Anbāh, 304, 308.
Jayamāla, king of Assam, 104.
Jūī Shāhī, an ancient name of Jalālābād, 307.

Kāçmīrī, formation of Nouns in, 29 ff.
————, primary suffixes in, 193 ff.
————, secondary suffixes in, 221 ff.
Kadaphes, coins of, 135.
Kadphises I., coins of, 133.
Kāmadēva, *n. pr.* of a Brahmin in Sualkuci plates, 123, 124.
Kaṭaka, mentioned in Cāṭēçvara Inscription, 322, 326.
Kēçarī kings of Orissa, in Mādalā Pāñji, 377.
Kēsaba-Kōili, modern Oṛiyā song, 334.
Khān Jahān, 156.
Khānzāda Bēgam, grand-aunt of Akbar, 298.
Khiẓr Khān Hazāra, 299.
Khorda, history of later kings of, 380 ff.
Khwāja 'Āṣim (Khān Daurān), 147.
————————, personal account of, 159.
Khwāja Bāgh, 304.
Khwāja Mīraki, death of, 309.
Khwāja Mu'aẓẓam (*also* Mu'aẓẓam Sulṭān), 313.

Khwāja Muẓaffar Pānipāti, 155.
Khwāja Rēg-rawān, name of a place, 300.
Khwāja sih yārān, name of a place, 300.
Kia-pi-shi, geographical name, meaning of, 14.
Kōsambakuṭī, a building in the Jētavana, mentioned in the Set Mahet Inscription, 278, 285.
Kṛṣṇācārya, 22.
Kṛṣṇa Siṁha of Dhārākōṭa, author of Oṛiyā version of Harivaṁça, 348.
Kūlāb, name of a place, 303.
Kuliçaçreṣṭha, 21.
Kuṣaṇa Type of Writing, as distinguished from Northern Kṣatrapa type, 275 ff.

Lāl Kunwār, 149.
Land System of the Moghul Empire, described by Edw. Stephenson, 172.
Lōkanātha Dāsa, an Oṛiyā poet, 370.

Mādalā Pāñji, 376 ff.
Mahābat Khān, 144.
Mahābhārata, Oṛiyā version of, 346 ff.
Māham Bēgha, 311.
Māh Cacak Khalīfa, 310.
Mahōdaya, name of a place in Inscription of Bhōja I., from Marwar, 292, 294.
Maitrēya (*the future Buddha*), supposed images of, 284.
Makunda Dēva, 336.
——— ——— ———, king of Khorda, 384.
Mārkaṇḍa Dāsa, 334.
Mastī Firāq, 301.
Mathurāmaṅgala, Oṛiyā poem by Bhaktacaraṇa Dāsa, 360.
Mīram Bēg, father of Mun'im Khān, 308.
Mīr Farīdūn, 314.
Mīr Jumlah, personal account of, 161.
Mīr Qamaru-d-dīn, 164.
Mīrzā 'Askarī, 303. 304.
Mīrzā Hindāl, accompanied Humāyūn during his attack on Balkh, 304.
——— ———, death of, 306.
Mīrzā Ibrāhīm, made prisoner by the Uzbaks, 304.
——— ———, married to Humāyūn's daughter, Bakhshī Bānū, 306.
——— ———, death of, 310.
Mīrzā Kāmrān, 299 ff.
——— ———, religious questions put before him by Ḥusain Qulī, 302.
——— ———, receives Kūlāb as his fief, 303.
——— ———, defeats Humāyūn in the Qipçāq Valley, 305.
——— ———, blinding of, 307.
Mīrzā Sulaimān, 301 ff.
——— ———, accompanied Humāyun during the attack on Balkh, 304.
——— ———, siege of Kābul by, 309.
Mīrzā Yādgār Nāṣir, trial and execution of, 300.
Mixed dialect of Sanskrit, instances of, 279.
Munyyid Bēg Dūldai Barlās, 299.
Muḥammad 'Alī Taghāī, Governor of Kābul, 301.
Muḥammad Amīn Khān, 153 ff.
——— ——— ———, personal account of, 158, 162.
Muḥammad Bāqir Khān, 153.
Muḥammad Farkh Fāl, son of Humāyūn, 308.
Muḥammad Ḥakīm, son of Humāyūn, 308.
Muḥammadī Mīrzā, 298.
Muḥammad Ja'far, *see* Taqarrub Khān.
Muḥammad Qāsim Manjī, 301.
Murshid Qulī Khān, 156.
Muḥammad Yār Khān, 142 ff.
Mullā Ḥisāmu-d-dīn of Samarqand, teacher of Akbar, 306.
Mun'im Khān, 306 ff.
———-———, appointed guardian of Akbar, 307.
———-———, his father was Mīram or Bairām Bēg, 308.
———-———, Bāyazīd Bīyāt enters his service, 309.
———-———, death of, at Gaur, 315.
Music, Oṛiyā, character of, 337.
Muẓaffar 'Alī Tarbatī, dīwān of Bairām Khān, 311.
Muẓaffar, king of Gujarāt, 315.

Nāgabhaṭa, *Mahārāja*, mentioned in Marwar Inscription of Bhōja I., 294.
——— ———, *Yuvarāja*, mentioned *ibidem*, 293, 295.
Nandiviçāla, a technical term, meaning of, 276 note 2.
Nāṣir Khān, 155.
Niẓāmu-l-mulk, *see* Ghāzīu-d-dīn Khān.
Northern Kṣatrapa Type of Writing, 275.

Orissa, conquest of, by Cōḍagaṅga, 329
——— ———, modern literature of, 332 ff.
Orme, letters by, to Stephenson, 170 ff.
Ou-kong, Itinerary of, quoted, 13 ff.

Pālakastambha, king of Assam, 104.
Pāli *saddhiṁ*, derivation of, 279.
Palti, lake, *i.q.* Yamdo-Croft, 256 ff.
Parīān, name of a place, 303.

Pema-koi, Buddhist monastery, 127 ff.
Peukelaus, coin of, 131.
Prabhāsa, *n. pr.* of a scribe in Marwar Inscription of Mahārāja Bhōja I., 292, 295.
Pralambha, king of Assam, 103.
Prēmakalā, Oṛiyā poem by Abhimanyu, 375.
Prēmapañcāmṛta, Oṛiyā poem by Bhūpati Paṇḍita, 361 ff.
Puṣyamitra, *n. pr.* of a *bhikṣu* in Set Mahet Inscription, 278, 280.

Qamaru-d-dīn Khān, 154.
Quṭbu-d-dīn Kākī, shrine of, at Dehli, 310.
Quṭbu-l-mulk, 156.

Rājā Chabēlah Rām, 156.
Rājā Jagaddēva, 336.
Rājā Jai Singh of Ambēr, 156.
Rājēndra, mentioned in Cāṭēçvara Inscription, 319, 321, 325.
Rāmabhadra, Mahārāja, mentioned in Marwar Inscription of Bhōja I., 294.
Rāmacandra Dēva, king of Khōrdā, 383.
Rāmāyaṇa, Oṛiyā version of, 344 ff.
Rasakallōla, Oṛiyā poem by Dīnakṛṣṇa Dāsa, 358.
Ratnapāla, king of Assam, Inscription of, 99 ff., 120 ff.
Rudradāsa, *n. pr.* of a *Çrēṣṭhī* in Inscription of Huviṣka, 276, note 2.

Sa'ādatu-l-lāh Khān, 157.
Sabhā Cand, 145.
Sadānanda Kavisūrya-brahmā, Oṛiyā poet, 371 ff.
Sādāt Khān, 156.
Saddhyavihārin, meaning of, 279.
Sa'du-l-lāh Khān, 154.
Saifu-l-lāh Khān, 154.
Samding, monastery on lake Yamdo in Tibet, 262.
Sarbuland Khān, 156.
Sārōḷā Dāsa, author of Oṛiyā version of Mahābhārata, 346 ff.
Sarvāstivāda School, mentioned in Set Mahet Inscription, 278, 280.
Sayyid Afṣal, 155.
Sayyid Muḥammad 'Arab, *Imām* of Shāh Ṭahmāsp, 297.
Sayyid Muẓaffar Khān Bārhah, 156.
Set Mahet, modern site of Çrāvastī, 285 ff.
Shahāmat Khān, 156.
Shāh Bardī Bīyāt, *i.q.*, Bahrām Saqqā, 298.
———, in the service of Mīrzā Kāmrān, 299.
Shāhiyas of Kābul, 13.
Shāh Nasīmī, *Turki* Dīwān of, 300.
Shāh Qāsim Anwar, Persian Dīwān of, 300
Shāhzāda Khānam, married to Humāyūn, 306.
Shaikh 'Abdu-n-nabī, 314.
Shamsu-d-dīn Atka, 312, 313.
Shastri, H. P., article by, on the discovery of a Sanskrit work by Āryadēva, 175 ff.
Shēr Afgan Khān, 156.
Shujā'atu-l-lāh Khān, 155.
Shukru-l-lāh Khān, 157.
Siddha Bāladēva, 22.
Sivāgrāma, name of an *agrahāra* in Marwar Inscription of Bhōja I., 292, 293, 294.
Siyālgīrī, speaking a dialect of Gujarāti in District Midnapur, 185 ff.
Smith, V. A., article by, on Numismatic Novelties, No. III. Ancient and Mediæval India, 130 ff.
Stein, M. A., article by, on new inscriptions discovered by Major Deane, 1 ff.
Stephenson, Edward, personal account of, 167 ff.

Tahmāsp, meets Humāyūn in Sīstān, 297.
Taqarrub Khān, 146 ff.
Taraki (Satrap), coin of, 133.
Tardī Bēg, 309.
Tārīkh-i-Humāyūn, title of Memoirs of Bāyazīd Bīyāt, 297.
Telephus, coin of, 130.
Tōramāṇa, coin of, 139.
Traipiṭaka, occurrence of term, 278, 280.
Tsang-po of Tibet, identity of, with the Dihong, 126 ff.
Tughril-i-Tughān Khān, mentioned in Cāṭēçvara Inscription, 319, 322, 325.
Tuṁghāna, *see* Tughril i-Tughān Khān.
Tyāgasiṁha, king of Assam, 103, 108, 114.

Udyāna under Turkish rule, 15.
Upēndra Bhañja, Oṛiyā poet, 11, 336, 362 ff.

Vāmadēvapāṭakā, name of a village in Bāragaon plates, 111, 118.
Vanamāla, king of Assam, 104.
Vasu, N. N., article by, on the Cāṭēçvara Inscription of Anaṅgabhīma II. of Orissa, 317 ff.

Vāsudēva, *n. pr.* of a Brahmin in Sualkuci plates, 123, 124.
———, *n. pr.* of a Brahmin, in Marwar Inscription of Bhōja I., 292, 295.
Vasumitra, 20.
Vatsarāja, *Mahārāja*, mentioned in Marwar Inscription of Bhōja I. 293, 294.
Vicitra Rāmāyaṇa, Oṛiyā poem by Bisvanātha Khuṇṭiā, 368.
Vidagdha Cintāmaṇi, Oṛiyā poem by Abhimanyu, 375.
Vigrahastambha, king of Assam, 103, 108, 114.
Vijayastambha, king of Assam, 104.
Viradatta, *n. pr.* of a Brahmin in Bāragaon plates, 112, 119.
Vīrakiçōra Dēva, king of Khōrdā, 383.
Viṣṇu, *n. pr.* of a Brahmin, minister of Anaṇgabhīma II., 319, 321, 325.
———, *n. pr.* of a Brahmin in Marwar Inscription of Bhōja I., 192, 295.

White Huns, coins of, 139.
Wilson, C. R., article by, on an unrecorded Governor of Fort William in Bengal, 167 ff.

Yamdo-Croft, a lake, travels on shores of, 256 ff.

Zabardast Khān, 156.
Zū-l-fiqār Khān, 142 ff.
———, death of, 145 ff.

JOURNAL

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ASIATIC SOCIETY OF BENGAL.

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No. I.—1898.

Materials for a Flora of the Malayan Peninsula.—*By* GEORGE KING, K.C.I.E., M.B., LL.D., F.R.S., *Superintendent of the Royal Botanic Garden, Calcutta.*

No. 10.

I had hoped in the present contribution to have completed, for these *Materials*, my account of the whole of the remaining Natural Orders of *Calycifloræ*. This hope has, however, been frustrated by sickness. I have decided therefore to offer now to the Society the account of the five Orders which I have been able to elaborate; trusting, at some time in the near future, to deal with the remaining Orders of the Class. Following the sequence adopted by Sir Joseph Hooker in his Flora of British India, those treated of in the present paper come to be numbered as below; Nos. 48 *Lythraceæ*, 49 *Onagraceæ*, 50 *Samydaceæ*, 52 *Cucurbitaceæ*, and 56 *Araliaceæ*. And those which remain to be described would be Nos. 46 *Myrtaceæ*, 47 *Melastomaceæ*, 51 *Passifloraceæ*, 53 *Begoniaceæ*, 54 *Ficoideæ*, 55 *Umbelliferæ*, and 57 *Cornaceæ*. After finishing the *Calycifloræ*, I hope, in collaboration with my friend and successor Dr. D. Prain, to describe the families which are embraced in the gamopetalous and apetalous groups.

Order XLVIII. LYTHRACEÆ.

Trees, shrubs or herbs; branches often quadrangular. *Leaves* entire, opposite, sometimes alternate or whorled; stipules 0. *Inflorescence* various, often in cymes or panicles. *Flowers* hermaphrodite, regular,

rarely oblique, unisexual in *Cyrpteronia*. *Calyx-tube* free, persistent; lobes 3–6, valvate, some accessory often added. *Petals* as many as the calyx-teeth, rarely 0, inserted near the mouth of the calyx-tube. *Stamens* definite or numerous, inserted on the calyx-tube. *Ovary* free in the bottom of the calyx-tube (rarely inferior), 2–6-celled, style long; stigma capitate, rarely 2-lobed; ovules numerous, placentas axile (rarely parietal). *Fruit* coriaceous or membranous, free or more or less adnate to the base of the calyx, 2–6-celled or (by absorption of the partitions) 1-celled, dehiscent or indehiscent. *Seeds* numerous, various in shape, angular, sometimes winged; albumen none; embryo straight, (cotyledons convolute in *Sonneratia* and *Punica*.) DISTRIB. Species about 275 in tropical regions and especially in those of the New World; a few in temperate zones.

Tribe I. AMMANNIÆ. Herbs, mostly sub-aquatic, with small or minute flowers; the calyx membranous	1. AMMANNIA.
Tribe II. LYTHREÆ. Trees or shrubs with moderate or large-sized flowers (minute in *Crypteronia*), large often wrinkled petals, and coriaceous or herbaceous calyx.	
Stamens not more than 12.	
Calyx 6-toothed; petals 6; stamens 12; capsule circumscissile, 1-celled; seeds cuneate-obovate, angled ...	2. PEMPHIS.
Calyx 4- or 5-toothed; petals 0; flowers numerous, minute, racemose, sub-unisexual; stamens 4 or 5; capsule 2-celled and 2-valved; seeds minute, narrowly winged on one side	3. CRYPTERONIA.
Stamens indefinite.	
Seeds free, not imbedded in pulp.	
Stamens in 2 or more rows; capsule 3–6-celled; seeds large, winged laterally	4. LAGERSTRŒMIA.
Stamens in a single row; capsule 4–8-celled; seeds minute, narrowly winged at the upper margin ...	5. DUABANGA.
Seeds imbedded in pulp, angular; berry 10–15-celled ...	6. SONNERATIA.

1. AMMANNIA, Linn.

Annual glabrous herbs growing in damp places; branches often quadrangular. *Leaves* opposite and alternate, sometimes whorled, entire; stipules 0. *Flowers* small, axillary, solitary and subsessile, or in small trichotomous cymes; bracteoles usually 2. *Calyx* campanulate or tubular-campanulate, 3–5-toothed, often with minute interposed teeth or folds. *Petals* 3–5 or 0, small, inserted between the calyx-teeth. *Stamens* 2–8, inserted on the calyx-tube. *Ovary* enclosed in the calyx-tube, 1–5-celled, the septa very thin and often absorbed; style filiform or short, stigma capitate; ovules numerous, placentas axile. *Capsule* membranous, globose or elongated-ellipsoid, enclosed in the calyx, 2–3-valved,

irregularly breaking up, or circumscissile. *Seeds* many, small, smooth, round on the back and with a raphe on the inner face, ellipsoid or nearly hemispheric; placenta ultimately free central by the absorption of the dissepiments covered by the seeds. DISTRIB. Species 30; in the tropical or warm temperate zones of the whole world.

Flowers sessile, calyx-tube elongate-campanulate, capsule ellipsoid, seeds narrowly oblong, falcate ... ... 1. *A. peploides.*
Flowers pedicelled, calyx-tube depressed-hemispheric, capsule depressed-globose, seeds sub-hemispheric ... ... 2. *A. baccifera.*

1. AMMANIA PEPLOIDES, Spreng. Syst. I, 444. *Flowers* in short axillary branches, sessile, solitary in the axils of reduced leaves; bracts in pairs, filiform, shorter than the tube of the calyx. *Calyx-tube* elongate-campanulate, almost smooth, its mouth with 4 acutely triangular teeth. *Petals* absent, or 4 and minute. *Capsule* 2-valved, ellipsoid; *seeds* narrowly oblong, sub-falcate, pink, angular, the hilum obscure. *Leaves* opposite, their midribs prominent; those of the flower-bearing branches linear-oblong, bearing a flower in the axil of each; those of the main stem elliptic or obovate, narrowed to the base and almost petiolate. *Stems* decumbent, often rooting, sometimes erect. Boiss. Flor. Orient. II, 742; Kurz in Journ. As. Soc. 1877, pt. II, 84; Clarke in Hook. fil. Flor. Br. Ind. II, 566. *A. nana*, Roxb. Flor. Ind. I, 427, (not of Wallich). *A. repens*, Rottl., DC. Prodr. III, 80. *Ameletia indica*, DC. in Mem. Soc. Hist. Nat. Genev. III, 11 (1825) 2, and 82, t. 3 f. A.; Prodr. III, 76; Wall. Cat. 2093; W. & A. Prodr. 303; Blume Mus. Bot. II, 135, t. 47; Dalz. & Gibs. Bomb. Flor. 96; Wight Ic. t. 257. *A. elongata*, Blume Mus. Bot. II, 135. *A. acutidens*, Miq. Flor. Ind. Bat. I, Pt. I, 617. *A. polystachya*, Wall. Cat. 2094. *A. latifolia*, Wall. Cat. 2096, (partly *Peplis indica*,) Willd. Sp. Pl. II, 244.

SOUTH ANDAMAN; near the settlements of Port Blair and Port Mowat; doubtless introduced as a weed of cultivation. DISTRIB. India, China, Persia; in rice and other fields.

2. AMMANNIA BACCIFERA, Linn. Sp. Pl. 120. *Flowers* in very condensed axillary racemes or clusters shorter than the leaves; bracts filiform, shorter than the flower-pedicels. *Calyx-tube* widely campanulate, short, ridged; the teeth 4, broadly triangular, acute. *Petals* none or minute. *Capsule* depressed-globose, imperfectly circumscissile above the middle. *Seeds* sub-hemispheric, black, excavated on the plane face. *Leaves* opposite, rather distant, linear-oblong, sub-acute or obtuse, narrowed at the base, smaller upwards, 2–5 in. long. *Stem* erect, glabrous, 8–24 in. long. Blume Mus. Bot. Lugd. Bat. II, 133; Dalz. & Gibs. Bomb. Flor. 97; Kurz in Journ. As. Soc. 1877, Pt. II, 85; Clarke in Hook. fil. Flor. Br. Ind. II, 569. *A. vesicatoria*, Roxb. Hort. Beng. 11

Flor. Ind. I, 426; ed. Wall. I, 447; DC. Prodr. III, 78; W. & A. Prodr. 305; Wall. Cat. 2098, (partly). *A. indica*, Lamk. Ill. I, 311, No. 1555; DC. l. c. 77; W. & A. Prodr. 305; Wall. Cat. 2099; Blume l. c. t. 46. *A. debilis*, Ait. Hort. Kew, ed. 1, I, 163. *A. verticillata*, Boiss. Flor. Orient. II, 743, (not of Link). *Hapalocarpum vesicatorium* and *H. indicum*, Miq. Flor. Ind. Bat. I, Pt. I, 618. *Cryptotheca apetala*, Blume Bijd. 1128; DC. l. c. 76.

Perak; *King's Collector* 303; *Curtis* 3195. S. Andaman, in similar situations with the last.

2. Pemphis, Forst.

A maritime shrub or tree, 25–35 ft. high. *Leaves* opposite, oblong to oblong-lanceolate, entire, very thick, fleshy. *Flowers* small, axillary, solitary, peduncles 2-bracteate at their base. *Calyx-tube* campanulate, 12-∞-ribbed; teeth 6, short, with 6 shorter accessory teeth. *Petals* 6, inserted at the mouth of the calyx-tube and nearly as long, obovate, wrinkled, white or rose. *Stamens* 12, inserted in two series towards the middle of the calyx-tube. *Ovary* free at the bottom of the calyx-tube, 3-celled at the base; style long, stigma capitate; ovules many, ascending; placentas 3, sub-basal. *Capsule* coriaceous, obovoid or nearly globose, included in the calyx-tube or exserted nearly half its length, somewhat irregularly circumscissile, ultimately 1-celled. *Seeds* very many, long cuneate-obovoid, angular, smooth, standing out in all directions from the apparently free central placenta.

Pemphis acidula, Forst. Gen. t. 34. Young parts more or less clothed with grey silky hairs, the young branches 4-angled. *Leaves* subsessile or very shortly petioled, sub-acute or obtuse, ·5–1·5 in. long. *Flowers* white. *Capsule* ·4 in. long and ·2 in. in diam. DC. Prodr. III, 89; Wall. Cat. 2108; W. and A. Prodr. 307; Griff. Notul. IV, 510; Blume Mus. Bot. II, t. 43; Miq. Flor. Ind. Bat. I, pt. I, 619; Bedd. Flor. Sylv. Anal. Gen. t. XIV, fig. 5; Kurz For. Flor. I, 518. *P. angustifolia*, Roxb. Hort. Beng. 91; Flor. Ind. II, 465. *P. setosa*, Lour. Flor. Filip. ed. I, 410. *Maclellandia Griffithiana*, Wight Ic. t. 1996. *Lythrum Pemphis*, Linn. f. Suppl. 249; Lamk. Ill. II, 408, fig. 2. *Melanium fruticosum*, Spreng. Syst. II, 445.

On the beech in Singapore and probably in all the provinces. Andaman and Great Coco Islands; *Prain*. Distrib. Burma, Ceylon, S. of British India.

3. Crypteronia, Blume.

Trees. *Leaves* opposite, petioled, entire, ovate or lanceolate. *Racemes* elongate, in branched panicles. *Flowers* minute, white or green,

with short linear bracts at the base of the pedicels, polygamo-diœcious. *Calyx-tube* short, saucer-shaped, or longer and subhemispheric; teeth 5 (rarely 4), valvate, persistent. *Petals* 0. *Stamens* as many as the calyx-teeth, inserted between them near the mouth of the calyx-tube. *Ovary* free, 2-celled, with numerous horizontal or ascending ovules attached to the axile placentas; style long, filiform; stigma capitate, obscurely 2-lobed. *Capsule* surrounded at the base by the calyx, globose, pubescent, crowned by the persistent style, 2-celled, dehiscing so as to divide the style, fruit-pedicel deflexed. *Seeds* many, elongate-ellipsoid, narrowly winged on one side. DISTRIB. Species 5, extending from the Khasia Hills to the Philippine Islands.

Leaves membranous, usually narrowed to the base, nerves 5 or 6 pairs, calyx less than ·1 in. in diam. ... ... 1. *C. paniculata.*
Leaves coriaceous, rounded or cordate at the base, nerves 7 or 8 pairs, calyx more than ·1 in. in diam. ... ... 2. *C. Griffithii.*

1. CRYPTERONIA PANICULATA, Blume Bijdr. 1151. A tree 20–40 feet high; young branches glabrous or sometimes puberulous. *Leaves* membranous, oblong to oblong-lanceolate or more or less broadly elliptic, bluntly acuminate or blunt, narrowed to the base, entire, glabrous on both surfaces or slightly pubescent on the lower; main nerves 5 or 6 pairs, rather faint, curved; length 3–6 in., breadth 1·25–2·5 in. *Flowers* on short pedicels, very numerous, in long cylindric pubescent or glabrous racemes longer than the leaves, the racemes often panicled. *Calyx* less than ·1 in. in diam., its teeth triangular or triangular-lanceolate, acute. *Stamens* in the hermaphrodite flowers of the same length as the calyx-teeth, longer in the male flowers. *Capsules* globose-conic, puberulous or minutely velvety. Kurz in Journ. As. Soc. Beng. 187, Pt. II, 86; For. Flora Burma, I, 519. *C. pubescens*, Blume Mus. Bot. Lugd. Bat. II, 123; Clarke in Hook. fil. Flor. Br. Ind. II, 574; Griff. Notul. IV, 404; Ic. Pl. Asiat. t. 564, fig. II. *C. glabra*, Blume Mus. Bot. II, 123; Clarke in Hook. fil. Flor. Br. Ind. II, 574. *Henslovia pubescens*, Wall. Cat. 4904; Pl. As. Rar. III, 14 t. 221; Miq. Flor. Ind. Bat. I, Pt. I, 716; Planch. in Hook. Lond. Journ. Bot. IV, 477, t. XVI. *B. Henslovia Hookeri*, Wall. Cat. 8566. *H. affinis*, Planch. Lond. Journ. Bot. IV, 477 (*in part*). *H. leptostachys*, Planch. Lond. Journ. Bot. IV, 478. *H. glabra*, Wall. Cat. 4093; Pl. As. Rar. III, 14; Planch. in Hook. Lond. Journ. Bot. IV, 478; Miq. Flor. Ind. Bat. I, Pt. I, 716.

PENANG; *Porter.* MALACCA; *Maingay* (Kew Distrib. 650/2). PERAK; *King's Collector* No. 5205. ANDAMAN ISLANDS; very common; *King's Collector.* DISTRIB. Burma, Chittagong, Khasia.

I can find nothing better to distinguish the species which have been named

C. glabra and *C. pubescens* from each other than the presence on the latter of a small amount of hair, neither can I find any tangible character to separate either from *C. paniculata*, Blume. To the latter species, as the oldest, I therefore reduce both.

2. Crypteronia Griffithii, Clarke in Hook. fil. Flor. Br. Ind. II, 574. A tree 40–60 feet high; young branches glabrous. *Leaves* coriaceous, broadly elliptic, acute, very slightly narrowed to the rounded or cordate base, entire, glabrous on both surfaces; main nerves 7 or 8 pairs, distinct on the lower surface, curved, ascending; length 4–8 in., breadth 2·25–3·5 in. *Racemes* much longer than the leaves, rusty-pubescent, sometimes panicled; *flowers* numerous but not crowded, shortly pedicellate. *Calyx* rather more than ·1 in. in diam., its teeth triangular. *Stamens* exserted. *Capsule* shorter than the calyx-teeth, velvety, less than ·1 in. in diam., crowned by the long stout pubescent style. *Henslowiæ* sp. Griff. Notul. 406; Ic. Pl. Asiat. t. 564, fig. 1.

Malacca; *Griffith* 2513. *Maingay* (Kew Distrib.) 651. *Derry* 1201. Penang; *Curtis* 1739. Perak; *Scortechini* 221. *Wray* 2589, 2638. *King's Collector* 3473, 4152, 8592.

4. Lagerstrœmia, Linn.

Trees or shrubs. *Leaves* opposite, distichous (or the uppermost alternate), entire, oblong or ovate. *Panicles* axillary and terminal, the ultimate branchlets usually cymose, sometimes dense; peduncles 2-bracteate at their apex; pedicels 2-bracteolate. *Flowers* often large. *Calyx-tube* funnel-shaped, smooth, grooved, angular or sub-alate; lobes 5-sometimes 7–9, ovate, subacute, valvate. *Petals* 6, sometimes 7–9 (or 0), inserted at the summit of the calyx-tube, clawed, wrinkled; margin crisped, erose, or fimbriate. *Stamens* very many, inserted in several rows near the bottom of the calyx-tube; filaments long, exserted. *Ovary* sessile in the bottom of the calyx, 3–6-celled; style long, bent, stigma capitate; ovules numerous, ascending, placentas axile. *Capsule* more or less adnate to the calyx, ellipsoid, coriaceous, smooth, 3–6-celled, 3–6-valved. *Seeds* many (rarely few), elongate, flat, erect, winged from their summit. Distrib. Species 18, in South-east Asia extending to Australia.

Inflorescence and exterior of calyx stellately ferruginous-tomentose ... ... 1. *L. floribunda.*

Inflorescence and outside of calyx minutely cinereous or whitish-velvety (the calyx sometimes rusty in *L. Flos-Reginæ*).

Leaves glaucous beneath; calyx 10-ribbed, the mouth with only 5 teeth ... ... 2. *L. hypoleuca.*

Leaves not glaucous beneath.	
Calyx 8- or 9-ribbed, the teeth as many as the ribs and alternate with them; flowers 1·5 in. in diam.; leaves 2–3·25 in. long	3. *L. ovalifolia.*
Calyx 12–14-ribbed; the teeth half as many as the ribs, the ribs opposite the teeth broader; flowers 2–3 in. in diam.; leaves 3·5–8 in. long	4. *L. Flos-Reginæ.*

1. LAGERSTRŒMIA FLORIBUNDA, Jack in Mal. Misc. I, 38. A tree 15–30 feet high. *Leaves* ovate-oblong or elliptic-oblong, sub-acute, the base rounded, sub-sessile; main nerves 8–12 pairs, sub-horizontal or curving upwards; both surfaces minutely reticulate when dry, the upper glabrous and shining, the lower with deciduous stellate pale brown pubescence, or glabrous; length 5–7 in., breadth 2–2·75 in. *Panicle* much longer than the leaves, terminal, erect; the branches long, racemoid, the ultimate branchlets cymose, ascending, everywhere (as also the calyces,) covered with more or less deciduous wooly rusty pubescence. *Flowers* 1·5 in. in diam., on short pedicels. *Calyx* turbinate in bud, boldly 12-ridged, each alternate ridge passing into one of the 6 triangular calyx-teeth and often forming a mucro at its apex. *Petals* sub-orbicular, with wavy edges, rose-coloured changing to whitish. *Stamens* unequal, the outer rows the longest. *Capsule* ·5 in. long, elliptic, minutely cinereous-tomentose, half enveloped in the calyx, style persistent. DC. Prodr. III, 93; Wall. Cat. 2115; Miq. Flor. Ind. Bat. I, pt. I, 623 (*not Blume Mus. Bot. II, t. 41*); Griff. Notul. IV, 509; Kurz For. Flor. I, 522; Clarke in Hook. fil. Flor. Br. Ind. II, 577.

KEDAH; *Curtis* 2602. PENANG; *King.* TRANG; *King's Collector* 1407. MALACCA; *Maingay* (Kew Distrib.) 653/2. DISTRIB. Burma, Siam, China.

2. LAGERSTRŒMIA HYPOLEUCA, Kurz in Journ. As. Soc. Beng. for 1872 Pt. II, p. 30. A tree 60–70 feet high; all parts except the inflorescence glabrous. *Leaves* thickly membranous, oblong-lanceolate to elliptic or oblong-elliptic, shortly acuminate, the base rounded; main nerves 8–12 pairs, spreading, not prominent; both surfaces rather distinctly reticulate when dry, the upper shining, the lower glaucous; length 5–8 in., breadth 2–3 in., petiole ·3 in. long. *Panicles* minutely cinereous-velvety, longer than the leaves, terminal, few-branched, the branches with rather short cymose sub-horizontal branchlets. *Flowers* about 1·25 or 1·5 in. in diam., on jointed whitish unequal pedicels. *Calyx* turbinate in bud, minutely whitish-velvety, boldly 10-ribbed, the alternate ribs excurrent into the 5 triangular acute mucronate lobes of the mouth. *Petals* lilac, oblong, wavy, ·5 in. long. *Capsule* woody, oblong, mucronate, about ·65 in. long. For. Flor. Burm., I, 523; Clarke in Hook. fil. Flor. Br. Ind. II, 577.

Andaman Islands; *Kurz, Prain, King's Collectors.* Great Coco Island; *Prain.*

3. Lagerstrœmia ovalifolia, Teysm. et Binn. in Nat. Tijdsch. Ned. Ind. II. (1840) 306. A tree 50 or even 100 feet high. *Leaves* oblong, ovate or oblong-obovate, acute, slightly narrowed to the base; main nerves 4 or 5 pairs, curved, ascending, slightly prominent on the lower surface when dry; upper surface greenish with minute black dots when dry, glabrescent except sometimes the minutely pubescent nerves; the lower brown when dry, glabrescent; length 2–3·25 in., breadth 1·25–2 in., petiole ·25 in. *Panicle* terminal, puberulous, 3–8 in. long, few-flowered; the branches few, sub-horizontal, cymose, puberulous below; the pedicels minutely velvety, cinereous. *Flowers* 1·5 in. in diam., on jointed velvety pedicels. *Calyx* turbinate, minutely cinereous-velvety, with 8 or 9 bold winged ridges not passing into the calyx-teeth. *Calyx-teeth* 8 or 9, acutely triangular, the edges thickened and reflexed. *Petals* (with claw) ·75 in. long, orbicular, clawed, purple, their edges slightly undulate. *Capsule* elliptic-ovoid, blunt, minutely velvety, ·75 in. long, and ·6 in. in diam. Kriudk. Arch. III, 440; Pl. Nov. Hort. Bog. (ed. Vriese) 20. Blume Mus. Bot. Lugd. Bat. II, 127; Miq. Flor. Ind. Bat. I, Pt. I, 624; Koorders and Valeton, Bijdr. I, 193. *L. celebica*, Bl. l. c. 127. *L. hexaptera*, Miq. Flor. Ind. Bat. I, Pt. I, 623; Clarke in Hook. fil. Flor. Br. Ind. II, 577.

Malacca; *Maingay* (Kew Distrib. 653). Perak; *King's Collectors* 8701, 10025 & 10532. Pahang; *Ridley* 2640.

I can find no character to separate *L. hexaptera*, Miq. from the older species of Teysmann and Binnindik. Miquel's name is moreover an unhappy one, as the calyx-teeth are usually 9 and not 6.

4. Lagerstrœmia Flos-Reginæ, Retz (1789) Obs. V, 25. A tree 30–60 feet high, all parts except the inflorescence glabrous. *Leaves* oblong to elliptic-oblong, acute, narrowed (rarely obtuse) at the base, shortly petiolate; main nerves 10–13 pairs, curving upwards, slightly prominent beneath when dry; both surfaces minutely reticulate, glabrous, the upper shining, the lower dull and of a dark brown colour when dry, length 3·5–8 in., breadth 1·75–3 in., petiole ·25–·4 in. *Panicle* terminal, longer than the leaves, its ultimate branchlets cymose. *Flowers* from 2–3 in. in diam., on rather thick greyish unequal pedicels. *Calyx* turbinate, with 12–14 prominent stout ridges; those opposite the calyx-teeth broader, the mouth with 6–7 acute triangular spreading thick coriaceous teeth thickened at the edges. *Petals* sub-orbicular, clawed, corrugated and with undulate edges. *Stamens* all equal in length. *Capsule* oblong to sub-globose, minutely apiculate, ·8–1·25 in. long, and ·6–·75 in. in diam. Kurz in For. Flora Burm. I, 524; Clarke in

Hook. fil. Flor. Br. Ind. II, 577. *L. Munchhausia*, Lamk. Ency. III, 375; Ill. t. 473 fig. 2. *L. Reginæ*, Roxb. Pl. Corom. I, 46, t. 65; Hort. Beng. 38; Hook. fil. Flor. Br. Ind. II, 505; Blume Bijdr. 1127; DC. Prodr. III, 93; W. & A. Prodr. Flor. Penins. Ind. 308; Blume Mus. Bot. Lugd. Bat. II, 126; Miq. Flor. Ind. Bat. I, Pt. I, 623 and Suppl. 328. *L. speciosa*, Pers. (1807) Ench. II, 72 (not of DC.); Koehne in Engl. Bot. Jahrb. IV, 28; Koorders and Valeton, Bijdr. I, 190, (excl. from all where reduced the syn. *L. macrocarpa*, Wall.).

Malacca, Singapore. Perak. Distrib. Java, British India.

I have adopted Retz's name (published in 1789) for this plant, as it is pretty nearly certain what Retz's plant was. Koehne, Koorders and Valeton and others however adopt Persoon's name of *L. speciosa* on the ground that, although it dates from only 1807, it preserves the specific name of Linnæus (*Munchhausenia speciosa* 1770). But this procedure is rendered inadmissable when Linnæus's description of that plant is consulted, for he describes *M. speciosa* as *a shrub*, whereas this plant is a large tree; moreover the rest of his description would apply to various other species of *Lagerstræmia*; the identity of *M. speciosa*, *L.* is thus quite uncertain. *L. macrocarpa* of Wall. Cat. 2114, is a tree of about the size of *L. Flos-Reginæ* and resembles it in most respects, but differs (1) in having leaves of larger size (5–12 in. long) more or less broadly elliptic, never oblong or elliptic-oblong, the apex often sub-acute and the base broad or narrowed into a petiole twice as long as that of *L. Flos-Reginæ*; (2) in the calyx being very slightly, if at all, furrowed and never ribbed, and (3) in having a larger more globose capsule (1–1·35 in. long and nearly as much in diam.). This tree has been in cultivation in the Bot. Garden, Calcutta, side by side with *L. Flos-Reginæ* for many years. It flowers earlier than the latter, has pink (not lilac) petals, and much larger capsules. In my opinion it is a good species and should not be merged in *L. Flos-Reginæ*. It is found only in Burma and Chittagong. Kurz, who was familiar with it in its wild state in Burma, considered it distinct and kept it as a species in his Forest Flora of British Burma.

5. Duabanga, Ham.

Large glabrous trees with pendent quadrangular branches. *Leaves* opposite, distichous, large, short-petioled, elongated, acute, entire, cordate or rounded at the base. *Panicles* large, terminal, with opposite branches; flowers large. *Calyx-tube* wide, adnate to the base of the ovary; lobes 4–7, thick, valvate in the bud. *Petals* 4–7, clawed, obovate, crisped and undulate, white. *Stamens* very many, inserted on a perigynous ring. *Ovary* conical, 4–8-celled; style bent, long; stigma capitate, 4–8-lobed; ovules very many, ascending, placentas covering nearly the whole interior surface of the ovarian cells. *Capsule* sub-globose, surrounded at the base by the thick spreading calyx, coriaceous, perfectly or imperfectly 4–8-celled, 4–8-valved. *Seeds* very numerous, minute, ellipsoid, testa produced at both ends in two tails much exceeding the length of the nucleus. Distrib. Species 2; Eastern Himalaya, Assam and Malaya.

DUABANGA SONNERATIOIDES, Ham. in Trans. Linn. Soc. XVII, 178. A tree 60–100 feet high. *Leaves* thinly coriaceous, oblong to ovate-oblong, 7–12 in. long and 2·5–4 in. broad, glabrous, glaucous beneath. *Flowers* 2–2·5 in. across, on thick-jointed pedicels tapering to the base; panicle short, few-flowered, drooping. *Petals* 4–7, about 1 in. long. *Capsule* ovoid-globose, 1–1·5 in. in diam. Hook. fil. Ill. Him. Pl. t. 11; Kurz For. Flor. Burm. I, 525; Clarke in Hook. fil. Flor. Br. Ind. II, 579. *D. grandiflora*, Walp. Rep. II, 114. *Lagerstræmia grandiflora*, Roxb. Hort. Beng. 38; Flor. Ind. II, 503; DC. Prodr. III, 93; Wall. Cat. 2111; Blume Mus. Bot. I, 109. *Leptospartion grandiflorum*, Griff. Ic. Pl. Asiat. t. 591.

PERAK; *Scortechini, King's Collector* 5912. ANDAMANS AND NICOBARS, *King's Collectors.* DISTRIB. Burma, Assam, Khasia, Eastern Himalaya.

6. SONNERATIA, Linn. f.

Ever-green trees, growing near the sea, glabrous. *Leaves* opposite, petioled, coriaceous, entire. *Flowers* without bracts, large, three together at the summits of the branches, or axillary and solitary. *Calyx* thick, coriaceous; lobes 4–8, lanceolate, valvate. *Petals* 0, or as many as the calyx-lobes and linear-oblong. *Stamens* numerous, inserted in a circular band on the calyx-tube. *Ovary* nearly free, or adnate at the base to the calyx-tube, many-celled; style long, stigma capitate; ovules numerous, ascending, placentas axile. *Berry* subglobose, supported by the persistent calyx, 10–15-celled. *Seeds* very many, small, curved, angular, embedded in pulp; cotyledons convolute. DISTRIB. Species 4–5; on the tropical sea-shores of the Eastern hemisphere.

With petals	1.	*S. acida.*
Without petals:—		
Calyx in bud ovoid, obtuse	1.	*S. acida*, var. *Griffithii.*
Calyx in bud narrowly ellipsoid, tapering to both ends ...	2.	*S. alba.*

1. SONNERATIA ACIDA, Linn. fil. Suppl. 252. A small tree 10–35 feet high, the branchlets jointed and 4-angled. *Leaves* oblong to oblong-obovate or obovate, tapering into a broad short petiole, blunt and sometimes retuse; length 2–3 in., breadth 1·35 to 2 in. in the obovate forms. *Flower-buds* solitary, ellipsoid, the calyx-tube not angled; the calyx when fully developed 1 in. long, its lobes 6–8, the lobes triangular, reflexed. *Petals* linear, slightly broader towards the apex than at the base. *Style* exserted, sometimes 3 in. long, stigma capitate. *Capsule* depressed-globose, sometimes as much as 2 in. in diam., the apex somewhat concave, the walls thick. Roxb. Hort. Beng. 38; Flor. Ind. II, 506; Roth Nov. Sp. 233; DC. Prodr. III, 231; Wall. Cat. 3641;

W. & A. Prodr. 327; Wight Ic. t. 340; Griff. Notul. IV, 652; Blume Mus. Bot. I, 336; Miq. Flor. Ind. Bat. I, Pt. I, 496; Dalz. & Gibs. Bomb. Flor. 98; Brand. For. Flor. 242; Kurz For. Fl. Burm. I, 526; Clarke in Hook. fil. Flor. Br. Ind. II, 580; Koorders and Valeton, Bijdr. I, 198. *Rhizophora caseolaris*, Linn. Sp. Pl. 635. *Aubletia caseolaris*, Gærtn. Fruct. I, 479, t. 78.

Penang; *Curtis* 1108. Perak; *Scortechini*, *Wray* 2494. Andamans; *Kurz*, *Prain*, *King's Collectors*. Distrib. the coasts of Burma, the Deltas of the British Indian Rivers and of those of the Malayan Islands.

Var. Griffithii, *Leaves* obovate, petals none. *S. Griffithii*, Kurz Pegu Report, App. B. 54; For. Flora Burma, I, 526; Clarke in Flor. Br. Ind. II, 580. *S. alba*, Griff. (not of Smith) Notul. IV, 652. *S. neglecta*, Bl. Mus. Bot. Lugd. Bat. I, 338; Miq. Flor. Ind. Bat. I, Pt. I, 498.

Perak; *Scortechini* 967. Distrib. Burma.

The fruit of this variety is unknown; but the scanty material, so far as it goes, appears to show that the plant is merely an apetalous form of *S. acida* with leaves more obovate than is usual in that species. I have therefore reduced it to a form of the latter. Blume described other three species of *Sonneratia* with petals, *viz.*, *S. obovata*, *S. evenia*, and *S. lanceolata* separating them chiefly by characters taken from the shapes of the leaves. But in this genus the form of the leaf is very variable, and I doubt whether these three species are more than forms of *S. acida*. *S. Pagapat*, Blanco, and *S. ovalis*, Korth. are probably also forms of it.

2. Sonneratia alba, Smith in Rees Cyclop. XXXIII, No. 2. A small tree 10–15 feet high; young branches rather terete. *Leaves* obovate or obovate-reniform, decurrent on the short petiole, blunt or retuse, 2–4 in. long and nearly as broad, petiole ·125–·25 in. *Flower-buds* narrowly ellipsoid, tapering to each end, very slightly ridged; the fully developed calyx sharply angled; its lobes 6–8, oblong-lanceolate, acute. *Petals* none. *Flowers* about the size of those of *S. acida*, usually 2 or 3 together. *Capsule* broadly obconic, ribbed, 1 in. or more in diam. at the apex. DC. Prodr. III, 231; Blume Mus. Bot. Lugd. Bat. I, 338; Miq. Flor. Ind. Bat. I, Pt. I, 497; Kurz For. Flora Burma I, 526; Clarke in Flor. Br. Ind. II, 580; Koorders and Valeton, Bijdr. I, 200. *S. Mossambicensis*, Klotsch in Peters Reis. Mossamb. Bot. t. 12. *S. acida*, Benth. (*not of Linn. fil.*) Flor. Austral. III, 301; Hiern in Oliv. Flor. Trop. Afric. II, 483; Wall. Cat. 3641 B.

Singapore; *Wallich*. Distrib. Java, Moluccas.

Order XLIX. ONAGRACEÆ.

Herbs, rarely undershrubs, sometimes aquatic. *Leaves* opposite or alternate, entire or toothed, undivided (in *Trapa* the submerged leaves pinnatipartite), exstipulate. *Flowers* hermaphrodite, mostly axillary and solitary, or spiked or racemed towards the ends of the branches,

sub-irregular. *Calyx-tube* wholly adnate to the ovary (half-adnate in *Trapa*), limb with 2–5 valvate lobes. *Petals* epigynous, alternate with the calyx-lobes, rarely 0. *Stamens* as many or twice as many as the petals, inserted with them. *Ovary* inferior (half-inferior in *Trapa*), 1–6-celled, most often 4-celled; style 1, cylindric or subulate, stigma capitate or nearly 2-lobed or 4-fid; ovules one or many in each cell, pendulous or half-ascending, placentas axile. *Fruit* various, dehiscent or indehiscent, membranous capsular or bony, 1- or several-celled, 1 or ∞-seeded. *Seeds* without albumen, or nearly so. Distrib. Species 300, spread throughout the world, most abundant in the North Temperate Zone.

Stamens twice as numerous as the calyx-lobes ...	... 1. Jussiæa.
Stamens equal in number to the calyx-lobes ...	... 2. Ludwigia.

1. Jussiæa, Linn.

Herbaceous or suffruticose, sub-aquatic. *Leaves* simple, alternate, usually entire. *Flowers* white or yellow, solitary, axillary; pedicel usually bibracteate at the apex. *Calyx-tube* narrow, only slightly produced above the ovary; its teeth 4–6, acute, persistent. *Petals* 4–6, epigynous. *Stamens* also epigynous, twice as numerous as the petals. *Ovary* inferior, 4–5-celled; style simple, usually very short, the stigma 4- or 5-lobed; ovules numerous, axile, in several vertical rows at the inner angle of each cell. *Capsule* narrow, cylindric or angled, 4- or 5-celled, 8–10-ribbed, dehiscing septicidally. *Seeds* very numerous, without coma. Distrib. Species 30, tropical, chiefly American.

Jussiæa suffruticosa, Linn. Sp. Pl. 555. Erect, branching, 1–4 feet high. *Leaves* lanceolate, ovate-lanceolate or almost linear, acute or acuminate, narrowed to the base, villous, pubescent or sub-glabrous, 2–3 in. long, and ·25–·75 in. broad, sessile or very shortly petioled. *Flowers* ·5–·75 in. in diam., on very short pedicels, the bracts small or foliaceous. *Petals* wholly yellow. *Capsule* linear, cylindric, 1–2 in. long, membranous, not woody, 8-ribbed, deciduously villous or pubescent. *Seeds* sub-hemispheric; the testa with a prominent raphe, shining, brown, not corky. DC. Prodr. III, 58; Wall. Cat. 6334; Miq. Flor. Ind. Bat. I, Pt. I, 628; Kurz in Journ. As. Soc. 1877, Pt. II, 90; Clarke in Flor. Br. Ind. II, 587. *J. exaltata*, Roxb. Hort. Beng. 33; Flor. Ind. II, 401. *J. villosa*, Lamk. Dict. III, 331; DC. Prodr. III, 57; Wall. Cat. 6333; W. & A. Prodr. 336; Gibs. & Dalz. Bomb. Flor. 98. *J. fruticosa*, DC. l. c. *J. scabra*, Willd.; DC. l. c. *J. Burmanni, and octophila*, DC. l. c. *J. longipes*, Griff. Notul. IV, 689. *J. decumbens*, Wall. Cat. 6322. *J. angustifolia*, Lamk. Dict. III, 331 and Ill. t. 280, fig. 3; DC. Prodr. III, 55; Miq. Flor. Ind. Bat. I, Pt. I, 627. *Epilobium fruticosum*, Lour. Flor. Cochin-china 226. Rheede Hort. Mal. II, t. 50.

Singapore; Penang; Perak; Andaman Islands, and probably in all the other provinces; Distrib. British India, Ceylon.

A widely distributed plant to which many names have been given. It is readily distinguished from *J. repens*, Linn. (the only other species common to the tropics of both worlds) by its narrower leaves, membranous capsule and erect habit.

2. Ludwigia, Linn.

Herbs. *Leaves* alternate, undivided, sub-entire. *Flowers* usually axillary, solitary, sessile or nearly so, peduncle 2-bracteate at its apex. *Calyx-tube* scarcely produced above the ovary, linear in the Indian species; teeth 3–5, acute, persistent. *Petals* 3–5 (or 0), epigynous, yellow. *Stamens* equal in number to the calyx-segments, epigynous. *Ovary* inferior, 4–5-celled; style simple, stigma capitate; ovules very many, attached in 2 or more vertical rows to the inner angle of each cell. *Capsule* linear or oblong (in the Indian species), 4–5-celled, opening by terminal pores or breaking up irregularly along the sides. *Seeds* numerous, obovoid, smooth, raphe obscure or prominent but not large, without coma. Distrib. Species 20, mostly in North America; extending from the cool temperate zone to the equator; chiefly inhabiting marshes.

Capsules inflated, seeds in several rows	1. *L. parviflora.*
Capsules filiform, not inflated; seeds in a single row in each cell	2. *L. prostrata.*

1. Ludwigia parviflora, Roxb. Hort. Beng. 11; Flor. Ind. I, 419. An erect glabrous herb 8–24 in. high. *Leaves* lanceolate, linear-lanceolate or linear-oblong, narrowed to each end, 1–3 in long, and ·25–·75 in. broad. *Flowers* on short pedicels, usually 4-fid. *Petals* small. *Capsule* inflated, obsoletely 4-angled, smooth, crowned for sometime by the persistent calyx-teeth, ·35–·5 in. long. *Seeds* in many rows in each cell. DC. Prodr. III, 59; Wight Ill. t. 101; W. & A. Prodr. 336; Dalz. & Gibs. Bomb. Flor. 99; Benth. Flor. Austral. III, 307; Boiss. Flor. Orient. II, 752; Kurz in Journ. As. Soc. 1877, Pt. II, 91; Clarke in Hook. fil. Flor. Br. Ind. II, 588. *L. lythroides*, Blume Bijd. 1134; DC. l. c. *D. jussiæoides*, Wall. Cat. 6335 (*not of Linn. and others*).

Perak; *Scortechini* 442; *Wray* 2720. Distrib. British India and Ceylon.

2. Ludwigia prostrata, Roxb. Hort. Beng. 11; Flor. Ind. I, 420. *Stem* prostrate, or decumbent at the base and then erect, 8–24 in. long, glabrous. *Leaves* lanceolate or linear-lanceolate, acute or acuminate, tapering to the base, 2–4 in. long and ·35–·75 in. broad. *Flowers* sometimes more than one in an axil, sessile, 4-fid. *Petals* lanceolate, longer than the calyx. *Capsule* 4-angled, thin, filiform, not at all inflated,

smooth, crowned by the linear calyx-teeth; length ·5–1 in. diam. ·02 in. *Seeds* oval, in a single row in each cell. DC. Prodr. III, 59; Wight Ic. t. 762; Kurz in Journ. As. Soc. 1877, Pt. II, 91. Clarke in Flor. Br. Ind. II, 588. *L. diffusa*, Ham. in Trans. Linn. Soc. XIV, 301; Wall. Cat. 6336; DC. l. c. *L. fruticulosa*, Blume Bijd. 1133; DC. l. c. *Nematopyxis prostrata, pusilla, and fruticulosa*, Miq. Flor. Ind. Bat. I, Pt. I, 630.

Perak; *Curtis* 3183. Singapore; *King's Collector* 58. Andamans; *King's Collector*. Distrib. Burma, Cachar, Sylhet, Assam, and the base of the Eastern Himalaya.

A species closely resembling *L. parviflora*, but readily distinguished by having very slender capsules, through the walls of which the seeds may be distinguished lying in single row in each cell; whereas in *L. parviflora* the seeds are in several rows in each cell and are undistinguishable on the outside of the thick walls of the short inflated capsules.

Order L. SAMYDACEÆ.

Trees or shrubs. *Leaves* alternate, often distichous, petioled, rarely subsessile, simple, entire or slightly crenate or serrate, often closely punctulate beneath; stipules small, deciduous. *Flowers* regular, small, axillary, shortly pedicelled, densely fascicled or in long simple or panicled racemes. *Calyx* coriaceous, persistent; tube short, free, or longer and adnate to the ovary; limb 3–7-fid. *Petals* as many as the calyx-lobes (or 0), perigynous, imbricated. *Stamens* definite or indefinite, often with staminodes between or united in a tube with them. *Ovary* superior or half-superior, 1-celled; style 1, capitate or 3-fid at the apex, or styles 2–5; ovules many or several, placentas 2–5 (usually 3), parietal. *Fruit* loculicidally 2–5- (usually 3-) valved, valves carrying the seeds on their mesial line. *Seeds* several (usually few, sometimes many), oblong or angular, albuminous, usually drilled. Distrib. Species 180, scattered through the tropical regions of the globe, rarely also in the subtropical.

Flowers without petals:—	
Flowers in axillary glomeruli, rarely solitary	1. Casearia.
Flowers in long slender racemes or panicles	2. Osmelia.
Flowers with petals; flowers in axillary or terminal racemes or panicles	3. Homalium.

1. Casearia, Jacq.

Shrubs or small trees. *Leaves* alternate, distichous, petioled, undivided, entire or slightly serrate, often minutely punctate; stipules small, lateral, caducous. *Flowers* small, greenish-yellow, clustered in the axils (in the Indian species); pedicels short, jointed above their bases, surrounded by small scales. *Calyx* inferior, deeply 4–5-lobed;

lobes imbricate, obtuse, persistent. *Petals* 0. *Stamens* double the number of the calyx-lobes or thereabout, united in a tube with staminodes alternating with the free portion of the filaments; staminal tube hypogynous, sometimes very short so that the filaments are nearly or quite free. *Ovary* free, ovoid, 1-celled, style simple, stigma capitate or 3-fid; ovules many, parietal. *Fruit* succulent, globose or ovoid, ellipsoid (when dry somewhat 3-angular or 6-ribbed), 3-rarely 2-valved. *Seeds* many, angular or obovoid, with a fleshy usually coloured aril; embryo straight. DISTRIB. Species 140, in the warmer parts of the whole globe, most plentiful in America.

Leaves pubescent on the lower surface, glabrescent on the upper :—	
Leaves narrowed or rounded, but never cordate or truncate, at the base; glomeruli few-flowered	1. *C. Lobbiana.*
Leaves cordate or truncate at the base; glomeruli many-flowered	2. *C. grewiæfolia.*
Leaves glabrous on both surfaces :—	
Fruit not exceeding 1 in. in length and usually much shorter :—	
Leaves broadly elliptic, shortly acuminate, thinly membranous; calyx-teeth 4	3. *C. albicans.*
Leaves elliptic-oblong, thinly coriaceous or membranous, main nerves 10–12 pairs; stamens 10 ...	4. *C. andamanica.*
Leaves elliptic-oblong to elliptic-lanceolate, main nerves 6–8 pairs; stamens 8	5. *C. esculenta.*
Fruit large, fleshy, 1·5–2 in. long; leaves narrowly oblong; coriaceous.	
Flowers in glomeruli :—	
Leaves tapering slightly to base and apex; fruit apiculate	6. *C. Kunstleri.*
Leaves acute at the apex, sub-acute at the base; fruit not apiculate	7. *C. Clarkei.*
Flowers solitary or in fascicles of 2, axillary ...	8. *C. macrocarpa.*

1. CASEARIA LOBBIANA, Turcz. in Bull. Soc. Nat. Mosc. (1858), XXXI, Pt. I, 463. A slender tree 15–20 feet high; young branches slender, densely tawny-pubescent. *Leaves* oblong or oblong-lanceolate, shortly acuminate, the base rounded or narrowed; upper surface glabrescent, the midrib and nerves pubescent; lower surface sparsely pubescent, densely so on the midrib and nerves; main nerves 8–10 pairs, curving upwards, length 2–5 in., breadth ·75–2·25 in.; petioles ·2–3 in., tomentose, slender. *Flowers* few together in the leaf-axils, on very short pedicels, glabrescent. *Calyx-teeth* triangular, acute, reflexed. *Staminodes* villous, rather shorter than the stamens. *Fruit* almost sessile and nearly globose, orange-yellow when ripe, ·5 in. long and ·4 in. in diam. Clarke in Hook. fil. Flor. Br. Ind. II, 594.

Singapore; *Lobb.* Perak; *King's Collector* 2377, 2631, 10731; *Wray;* 829, 2594; *Scortechini* (without number). Distrib. Tenasserim.

2. Casearia grewiæfolia, Vent. Choix. 48. A small tree; young branches 4-angled, densely rusty-tomentose. *Leaves* oblong, acute, not at all or very little narrowed to the cordate sub-truncate base, the edges entire or minutely crenulate; upper surface shining, almost glabrous, the lower surface pellucid-punctate when fresh, tomentose on the midrib and 10–14 pairs of little-curved ascending main nerves, otherwise sparsely pubescent; length 4·25–6 in., breadth 1·25–2·35 in., petiole ·2 in. *Glomeruli* many-flowered, chiefly from the axils of fallen leaves; the flower-pedicels slender, ·25 in. long, minutely pubescent, articulated at the base. *Flower-bud* ·15 in. long; sepals minutely adpressed-pubescent, adnate at the base to the short staminal column. *Stamens* 8, the glabrous filaments alternating with the 8 pubescent staminodes. *Ovary* pyramidal, hairy at its junction with the style. *Fruit* compressed-ellipsoid, nearly 1 in. long, glabrous, boldly ridged when dry. DC. Prodr. II, 51; Miq. Flor. Ind. Bat. I, Pt. I, 706; Clarke in Flor. Br. Ind. II, 594. *C. variabilis*, Blume Mus. Bot. Lugd. Bat. I, 252. *C. subcuneata*, Miq. Flor. Ind. Bat. I, Pt. I, 706. *C. cinerea*, Turcz. in Bull. Soc. Nat. Mosc. (1858), XXXI, Pt. I, 462.

Malacca; *Maingay* (Kew Distrib.) 659, 661. Perak; *Scortechini;* 2003. Distrib. Java, Bali, and other Islands of the Malay Archipelago.

3. Casearia albicans, Wall. Cat. 7197. A shrub 3 or 4 feet high; young branches slender, very pale, almost white when dry, glabrous. *Leaves* thinly membranous, pale brown when dry and much pellucid-punctate, more or less broadly elliptic, shortly acuminate; the base rounded or very slightly narrowed, the edges entire, both surfaces glabrous and finely reticulate when dry; main nerves 8 or 9 pairs, curved, ascending; length 4–7·5 in., breadth 2·25–4 in., petiole ·25 in. *Glomeruli* small, few-flowered, axillary; flower-buds obovoid, almost sessile, surrounded by numerous acute bracteoles. *Calyx-teeth* 4, broadly triangular, glabrous. *Fruit* broadly ovoid, compressed, acute, subglabrous, 1 in. long and ·65 in. in its broad diameter. "*Samydeæ*," Wall. Cat. 7432.

Penang; *Wallich.* Perak; *King's Collector* 3634.

The above description is drawn up from the two sheets of Wall. Cat. above quoted and of King's Collector 3634. One of Wallich's specimens 9197 has fruit in a pocket detached from the twig, the others have no fruit. The plant here named *C. albicans* is not, however, that described under the same name by Mr. C. B. Clarke in the Flora of British India. Mr. Clarke's plant is 660 of Maingay's Herbarium, and is referred by me (along with 660/2) to *C. macrocarpa*, Clarke.

4. Casearia andamanica, new species. A tree 20–40 feet high; young branches pale brown, glabrous. *Leaves* oblong-elliptic, acute,

slightly narrowed and somewhat oblique at the very base; both surfaces glabrous, minutely reticulate when dry; main nerves 10–12 pairs, spreading, curving upwards, slightly prominent beneath; length 6–9 in., breadth 2·75–3·5 in., petiole ·5–·75 in. *Glomeruli* axillary, large and many-flowered; buds sub-globular, glabrous; pedicels about ·25 in. long glabrous, the bracteoles minute. *Calyx-segments* ovate, glabrous; staminal tube wide, nearly glabrous, adherent below to the sepals; filaments 10, as long as the tube and as the alternating villous staminodes. *Ovary* elongate-pyramidal, 3-angled, stigma capitate; fruit unknown.

Andaman Islands; *King's Collectors.*

5. Casearia esculenta, Roxb. Flor. Ind. II, 422. A shrub or small tree as high as 20 or 30 feet; young branches pale, striate when dry, glabrous. *Leaves* thinly coriaceous, elliptic-oblong to elliptic-lanceolate, acute at the apex and acute or obliquely rounded at the base, the edges entire; both surfaces reticulate; main nerves 6–8 pairs, spreading, not prominent; length 3–7 in., breadth 1·5–2·25 in., petiole ·25 in. *Glomeruli* axillary, many-flowered; buds and pedicels glabrous, the latter ·2–·25 in. long; bracteoles very short, glabrous. *Calyx-teeth* 4, broadly ovate, concave. *Stamens* 8, alternating with the staminodes. *Ripe fruit* ellipsoid to globular-ovate, glabrous, dehiscing by 2 or 5 valves, length ·75 in. or more. Clarke in Flor. Br. Ind. II, 592. *C. lævigata*, Dalz. in Hook. Journ. Bot. IV, 107; Dalz. & Gibs. Bomb. Flor. 11. *C. Championii* and *C. Zeylanica*, Thwaites, Enum. Pl. Ceylon, 19. *C. varians*, Thwaites Enum. 19 (*in part*).

Singapore; *Lobb, Griffith, Maingay* (Kew Distrib.) 657.

Perak; *Ridley* 5218; *Scortechini* 804; *King's Collector* 4699, 7001.

A widely distributed species presenting a considerable amount of variation. Perak specimens have larger leaves than those from British India; but they appear to have smaller fruits; for Roxburgh describes the fruit of the plant, as it grows in the Northern Circars, as being as large as a nutmeg.

6. Casearia Kunstleri, King n. spec. A tree 30–80 feet high; young branches pale, glabrous. *Leaves* coriaceous, narrowly oblong, tapering slightly to each end, the edges entire; both surfaces glabrous and minutely reticulate; the upper shining, the lower rather dull; main nerves 7 or 8 pairs, ascending and only slightly curved, prominent on the lower surface; length 5–7 in., breadth 1·5–2 in.; petiole ·25 in., stout. *Glomeruli* mostly in the axils of fallen leaves, many-flowered; pedicels stout, glabrous ·35–·45 in. long; buds ·15 in. long, blunt. *Calyx* 5-cleft, the segments broadly ovate, obtuse, concave, minutely pubescent. *Stamens* 10, broad, sub-acute, the filaments broad, pointed, their edges pubescent. *Staminodes* elliptic, their apices acute and

pubescent. *Ovary* broadly ovate, 5-celled; the stigma capitate-discoid, almost sessile. *Fruit* bright yellow, broadly ovoid or obovoid, apiculate, tapering also to the base, glabrous, 1·5–2 in. long and ·75–1·35 in. diam., pulpy and smooth when ripe, boldly 3-angled when dry.

Perak; *Wray* 3752; *King's Collector* 3694, 6936, 7118.

This resembles both *C. macrocarpa* and *C. Clarkei* in several respects, but it has larger and more numerous flowers, and the fruit is broader, in proportion to its length, than is the case in either of these species. The leaves are less shining and reticulate than those of *C. macrocarpa*, but they closely resemble those of *C. Clarkei*.

7. Casearia Clarkei, King. A tree; young branches thick, glabrous, striate. *Leaves* coriaceous, narrowly oblong, acute at both base and apex, both surfaces glabrous, the upper shining; main nerves 5–7 pairs, slightly curved, ascending, prominent beneath; length 5–10 in., breadth 1·5–2·75 in., petiole ·25–·4 in. long. *Glomeruli* very condensed, axillary, many-flowered; pedicels ·25 in. long, glabrous like the buds. *Ripe fruit* ovoid, bright yellow, 2 in. long and 1·25 in. in diam. *C. albicans*, Clarke in Flor. Br. Ind. II, 593 (not of Wallich).

Malacca; *Maingay* (Kew Distrib.) 660. Singapore; *Ridley* 6334.

This species resembles *C. macrocarpa* Clarke, but has smaller fruit. Its leaves are moreover larger, less shining and less reticulate, and the glomeruli are much more numerously flowered.

8. Casearia macrocarpa, Clarke in Hook. fil. Flor. Br. Ind. II, 593. A small tree; young branches reddish, glabrous. *Leaves* narrowly lanceolate, acute or acuminate, the base narrowed, the edges entire; both surfaces glabrous, shining, minute, reticulate when dry; main nerves about 5 or 6 pairs, curved, ascending, length 4–6 in., breadth 1 to 1·5 in., petiole ·3-4 in. long. *Glomeruli* axillary, one-or few-flowered; pedicels about ·15 in. long, glabrous, the buds glabrous outside, reddish; calyx-teeth 5, oblong, blunt, minutely velvety inside. *Fruit* obovoid or ellipsoid, compressed, 1·5–1·75 in. long by ·65 in. broad; seeds obovoid, compressed.

Penang; *Maingay* 660/2; *Curtis* 229 and 960.

2. Osmelia, Thwaites.

Trees. *Leaves* alternate, petioled, ovate or oblong-lanceolate, entire or obscurely serrate, epunctate; stipules minute, deciduous. *Flowers* small, very nearly sessile, in long simple or panicled racemes. *Calyx* inferior, divided nearly to the base; lobes 4 or 5, rounded, imbricate. *Petals* 0. *Stamens* 8 or 10, half alternating with as many 2-lobed hairy scales and half inserted in the notches of those scales. *Ovary* superior, 1-celled; styles 3, short, with capitellate or bifid stigmas; ovules few;

placentas 3, parietal. *Capsule* subglobose, 3-valved. *Seeds* few, subglobose, with a red fleshy aril. DISTRIB. Species 6; Malaya, Philippines, Ceylon.

OSMELIA MAINGAYI, King n. spec.. A dioecious tree 20–60 feet high; young branches slender, minutely tawny-tomentose. *Leaves* membranous, oblong or elliptic-oblong to elliptic, shortly acuminate, the base rounded or slightly narrowed, the edges entire or very obscurely crenate; the upper surface glabrous, the lower covered with minute yellowish pubescence especially on the nerves and midrib; main nerves 6–10 pairs, curved, spreading, interarching within the edge; length 4–6 in., breadth 1·75 to 3 in., petiole ·6–·75 in. *Male panicles* slender, terminal, several times as long as the leaves; flowers ·1 in. in diam. or less, on short pedicels bracteate at the base, in slightly distant small glomeruli. *Sepals* 4, membranous, imbricate, rotund, pubescent, concave. *Petals* 0. *Stamens* 8 in two rows, one row with longer filaments alternating with the row opposite the broad villous glands. *Panicles of female flowers* axillary, shorter than the leaves, slightly longer in fruit. *Calyx* as in the male, but the segments smaller. *Stamens* subequal, shorter than the calyx, the filaments very short, glands and ovary densely hairy; the latter sub-globular, tomentose, crowned by 3 short distant bifid glabrous stigmas, 1-celled; ovules 3, erect. *Capsule* ·5–·65 in. long, 3-ridged, dehiscing by 3 valves.

MALACCA; *Maingay* (Kew Distrib.) 1448. PERAK; *Scortechini* 158, 191, 623. *King's Collector* 741, 1240, 2339, 4259, 4096, 5667, 7660, 7045, 10017, 10981; *Wray* 3665. PAHANG; *Ridley* 2654. SINGAPORE; *King, Ridley* 3804, 1904.

This appears to be a very common tree in Perak; for there is large suite of specimens of it in the Calcutta Herbarium numbering about 150 sheets. The various gatherings vary somewhat as to the amount of pubescence and number of nerves on the leaves, as also in the length of the panicles; but I cannot make out more than one species. Maingay's specimen (Kew Distrib.) 1439 looks as if it might be different. There is only a single sheet of it at Calcutta, and no flower remains on its panicles. Beccari's Sumatra plant 928 may possibly belong to still another species. All the species have the *facies* of *Antidesma*; the capsular fruit when present however at once distinguishes them from that genus.

3. HOMALIUM, Jacq.

Shrubs or trees. *Leaves* alternate, crenate or subentire, petioled or sessile, rarely punctulate. *Flowers* hairy, small, in slender axillary and sub-terminal simple or panicled racemes; bract at the base of the pedicel often prominent but caducous. *Calyx-tube* funnel-shaped or cylindric, adnate to the base of the ovary; lobes 5–10, narrow, persistent. *Petals* 5–10, inserted in the throat of the calyx, linear-oblong, persistent. *Disc*

tomentose. *Stamens* solitary or in fascicles of 2–7, opposite the petals, alternating with large glands. *Ovary* half-superior, 1-celled; styles 2–5, filiform, stigmas capitellate; ovules many or several; placentas parietal, extending only down the upper free portion of the ovary. *Capsule* half-superior, coriaceous, 2–5-valved at the apex. *Seeds* few, angular or oblong. DISTRIB.—Species 50, scattered over the hot regions of nearly the whole globe.

Flowers never more than ·35 in. in diam. :—	
Stamens 1 opposite each petal; leaves glabrous ...	1. *H. longifolium.*
Stamens 2 in front of each petal; calyx-tube funnel-shaped :—	
Leaves glabrous, glaucous beneath; flowers 6-merous	2. *H. Kunstleri.*
Leaves glabrous except on the midrib beneath, not glaucous; flowers 6- or 7-merous	3. *H. propinquum.*
Leaves sparsely pubescent on both surfaces, the midribs tomentose; flowers 10-merous ...	4. *H. Griffithianum.*
Stamens 4 in front of each petal; flowers 6-merous, calyx-tube cylindric, expanding very slightly at the mouth	5. *H. frutescens.*
Flowers ·6–·75 in. in diam. :—	
Stamens 4 in front of each petal; calyx-teeth 5, much smaller than the petals	6. *H. undulatum.*
Stamens 7–9 opposite or sub-opposite to each petal; calyx-teeth 7–9, larger than the petals and accrescent	7. *H. grandiflorum.*

1. HOMALIUM LONGIFOLIUM, Benth. in Journ. Linn. Soc. IV, 35. A tree 30–60 feet high; young branches slender, lenticellate, almost glabrous. *Leaves* coriaceous, oblong or oblong-lanceolate, acute or shortly and bluntly acuminate, the base narrowed; the edges entire, sometimes slightly undulate; both surfaces quite glabrous, the lower darkest when dry; main nerves 7–9 pairs, spreading, curved, faint; length 3–4·5, in., breadth 1·5–1·75 in.; petiole ·3 in., stout. *Racemes* slender, axillary, solitary, rarely branched, 4–7 in. long, covered with minute white tomentum. *Flowers* ·15 in. across, almost sessile, in fascicles of 3 or 4, 6-fid. *Calyx-tube* narrow, its segments lanceolate like the petals but broader *Stamens* one opposite to each petal alternating with yellow-glands. *Fruit* unknown. Clarke in Flor. Br. Ind. II, 596. *Blackwellia macrostachya*, Turcz. in Bull. Soc. Imp. Mosc. 1863 (Vol. XXXVI), 610.

PENANG; *Phillips, Curtis* 201. MALACCA; *Maingay* (Kew Distrib.) 665; *Derry* 994. PERAK; *King's Collector* 4444, 7855, 10230, 10763; *Scortechini* 487, 2036. SELANGOR; *Scortechini* 1910.

2. HOMALIUM KUNSTLERI, n. spec. King. A tree 30–40 feet high; young branches glabrous, rather slender, smooth, glaucous. *Leaves*

coriaceous, oblong-elliptic, shortly acuminate, narrowed or rounded at the base, sometimes oblique; the edges remotely crenate, revolute when dry; both surfaces glabrous, the lower glaucous; main nerves 8 or 9 pairs, faint, curving upwards; length 4·5–7 in., breadth 2·25–2·75 in.; petiole ·2–·3 in., thick. *Racemes* solitary, axillary, slightly longer than the leaves, bearing rather distant glomeruli of 3 or 4 flowers each, the rachis densely and minutely tomentose. *Flowers* ·3 in. in diam., the pedicels about ·1 in. long. *Calyx-tube* short, widely funnel-shaped; teeth 6, oblanceolate, obtuse, spreading, minutely tomentose externally. *Petals* 6, broadly lanceolate, sub-acute, equal in length to the calyx-teeth, villous on the inner surface. *Stamens* 2 in front of each petal; the filaments glabrous rising from a small bulb. Ovary hairy. Styles 5, short, sub-erect.

Perak; *King's Collector* 4286, 7109.

3. Homalium propinquum, C. B. Clarke in Flor. Br. Ind. II, 597. A tree 60–80 or even 120 feet in height; young branches pale brown when dry, puberulous. *Leaves* coriaceous, elliptic to elliptic-obovate, obtuse, or shortly acuminate, more or less narrowed and sometimes slightly oblique at the base, the edges undulate- or undulate-crenate; both surfaces glabrous, the midrib alone sometimes puberulous beneath; main nerves 9–11 pairs, curved, spreading, prominent beneath when dry; length 4–7 in., breadth 2·25–3·5 in.; petiole ·25–·35 in. *Racemes* 4–12 in. long, clustered and sometimes panicled at the apices of the branches, covered with soft pale tomentum. *Flowers* ·2 in. in diam., 6 or 7-fid, in close clusters and on pedicels ·15 in. long. *Calyx-tube* funnel-shaped; its segments longer than the petals, subspathulate. *Stamens* twice as many as the petals, all bearing anthers. *Fruit* unknown. *H. longifolium*, (*in part*) Benth. in Journ. Linn. Soc. IV, 35. *Blackwellia propinqua*, Wall. Cat. 4898. *B. spiralis*, Wall. Cat. 4897A.

Penang; *Porter, Curtis* 1592. Perak; *King's Collector* 3748, 3935, 4883, 7936. Malacca; *Griffith; Maingay* (Kew Distrib.) 664.

4. Homalium Griffithianum, Kurz in Journ. As. Soc. Bengl. XL, Pt. II, (for 1877), 57. A tree 30–40 feet high, the young parts softly tawny-pubescent. *Leaves* membranous, obovate-oblong, shortly and bluntly apiculate, slightly narrowed to the rounded or minutely sub-cordate base, the edges subentire to coarsely crenate; both surfaces sparsely pubescent, tomentose or densely pubescent on the midrib and 7–9 pairs of spreading little curved not prominent main nerves; length 2·75–5 in., breadth 1·65–2·5 in.; petiole ·2–·4 in., pubescent. *Racemes* solitary, one and a half times as long as the leaves, softly tawny-tomentose; the glomeruli few-flowered, not crowded together. *Flowers* ·35 in. in diam., densely villous in all parts. *Calyx-tube* conical

expanding into a wide mouth ; the teeth 10, linear. *Petals* oblanceolate or spathulate, broader and longer than the sepals. *Stamens* 2 in front of each petal, glabrous. *Ovary* short, crowned by 5 short slightly spreading styles, glabrous towards the apex. *Fruit* unknown. Kurz For. Flora Burma, II, 531 ; Clarke in Flor. Br. Ind. II, 597. *H. fœtidum*, Benth. in Journ. Linn. Soc. IV, 37 (*in part*). *Blackwellia dasyantha*, Turcz. Bull. Soc. Imp. Mosc. Vol. XXXVI (1863), 610. *Blackwellia spec.*, Griff. Notulæ IV, 584.

KEDAH ; *Curtis* 2506. TRANG ; *King's Collector* 1393. DISTRIB. Tenasserim.

Kurz describes the calyx-lobes and petals as 6 each, and in that he is quite wrong; for dissection of Griffith's specimen (which is the type of the species) shows 10 of each. Although the structure of the flowers is the same in the gatherings of this plant from Burma, Kedah and Trang, there is considerable difference as to the amount of hair on the leaves and also as to their edges The Burmese specimens are rather obscurely crenate except when very young ; the Kedah plant has its adult leaves boldly crenate and minutely pubescent on the lower surface and glabrescent on the upper (except the midrib and main nerves) ; while the Trang specimens are glabrescent on both surfaces, with the exception of the nerves and midrib. The flowers of the Trang plant are moreover slightly larger than those either from Kedah or Tenasserim.

5. HOMALIUM FRUTESCENS, King. A tree 20–30 feet high ; young branches slender, pale when dry, glabrous, striate. *Leaves* thinly coriaceous, elliptic-oblong to elliptic, shortly acuminate, tapering slightly to the base ; main nerves 7 or 8 pairs, curving upwards, prominent beneath ; both surfaces glabrous, minutely reticulate, the lower pale-brown and the upper olivaceous when dry ; length 3–5 in., breadth 1·75–2·25 (rarely 2·75 in.), petiole ·1 in. *Racemes* axillary, sometimes with 2 or 3 branches, about as long as the leaves or sometimes longer, the rachis puberulous ; the flowers numerous but not crowded, in pairs or solitary, about ·25 in. long, and ·1 in. or ·15 diam. at the mouth ; the pedicel under ·1 in. in length. *Calyx* narrowly cylindric-conic, boldly ridged ; teeth 6, lanceolate, acute, erect. *Petals* larger than the petals, oblong-lanceolate, pubescent on both surfaces but especially on the upper. *Stamens* 4 opposite each petal and slightly exceeding it in length, glabrous. *Ovary* hairy, elongate; styles 5, as long as the stamens, cylindric, erect. *Fruit* unknown. *Blackwellia longiflora*, Miq. Flor. Ind. Bat. I, Pt. I, 715. *B. caryophyllacea*, Zoll. et Moritz. Syst. Verz. 33; Miq. Flor. Ind. Bat. l. c. 715; *Homalium caryophyllaceum*, Benth. in Journ. Linn. Soc. IV, 38. *Cordylanthus frutescens*, Blume Mus. Bot. Ludg. Bat. II, 27, fig. III. *Homalium cordylanthus*, Benth. in Journ. Linn. Soc. IV, 38.

SELANGOR ; *Ridley* 1902. JOHORE ; *Ridley* 4050, 4182. PERAK ; *King's Collector*, 776, 777, 784, 5246, 7040, 10471, 10237, 10102, 10996.

The flower of this is excellently figured by Blume in his Mus. Bot. as quoted above. Flowers however of a slightly different shape are found in some specimens. In these the calyx-tube is funnel-shaped and less cylindric, and the petals are more spreading. These are associated usually with larger leaves, more broadly elliptic in shape; and at one time I was of opinion that they might belong to a different species. But the examination of nearly a hundred specimens of the two forms as collected in Perak has convinced that they are not specifically separable. Blume describes the plant as a shrub, but in Perak it is always a small tree. Miquel's *Homalium obovale* from Sumatra (Flor. Ind. Bat. Suppl. 334) comes very near this, and perhaps is not distinct.

6. HOMALIUM UNDULATUM, n. spec. King. A tree 40–60 feet high; young branches slender, pale-brown, minutely lenticellate. *Leaves* thinly coriaceous, elliptic, shortly and bluntly acuminate, slightly narrowed and sometimes unequal at the base, the edges undulate-crenate; both surfaces glabrous and minutely reticulate when dry, the upper shining, the lower dull; length 3–4 in., breadth 1·75–2 in., petiole ·2–·25 in. *Inflorescence* consisting of a terminal panicle twice as long as the leaves and of a few solitary racemes from the upper leaf-axils, many-flowered, the rachises covered by minute rather sparse pale tomentum. *Flowers* ·6 or ·7 in. in diam., lax; their pedicels slender, tomentose, ·4 in. long. *Calyx-tube* widely funnel-shaped, very slightly ridged, minutely tomentose; teeth 5, lanceolate, tomentose on both surfaces like the tube. *Petals* 5, much longer than the sepals, obovoid, blunt, clawed at the base, reticulate, tomentose. *Stamens* shorter than the sepals and much shorter than the petals, 4 in front of each petal, glabrous. *Ovary* hairy, crowned by 3 narrowly conical spreading hairy styles. *Fruit* unknown.

PERAK; *King's Collector* 7064, 8184.

7. HOMALIUM GRANDIFLORUM, Benth. in Journ. Linn. Soc. IV, 37. A tree 30–40 feet high; young branches rather stout, glabrous. *Leaves* coriaceous, elliptic to oblong, acute or shortly acuminate, narrowed near the petiole, the edges revolute and obscurely crenulate; both surfaces minutely reticulate when dry, and the upper very shining, the lower somewhat duller; main nerves 9–12 pairs, ascending, only slightly curved; length 3·5–6·5 in., breadth 1·75–3·25 in.; petiole ·2–·3 in., stout. *Inflorescence* consisting of terminal few-branched panicles and of solitary axillary racemes with tomentose rachises. *Flowers* numerous but not crowded, solitary, not in glomeruli, ·75 in. in diam.; the pedicels ·2 in. long, tomentose. *Calyx-tube* short, hemispheric; teeth 7–9, spathulate-oblong, spreading, enlarged often flowering. *Petals* lanceolate, shorter than the calyx-teeth; the glands alternating with the petals, large. *Stamens* 7–12 opposite each petal; the filaments subulate, sparsely pilose. *Ovary* free or nearly so, 6–7-ridged, tomentose, conical; styles

6 or 7, short, glabrous, erect. *Fruit* unknown. Clarke in Flor. Br. Ind. II, 598. *Pierrea dictyoneura*, Hance in Trimen's Journ. Bot. for 1877, 339.

Malacca; *Griffith.* Perak; *Scortechini.* Singapore; *Ridley* 6527. Gulf of Siam; *Hance.* Distrib. Tenasserim.

An examination of flowers of his *Pierrea dictyoneura*, sent to me by the late Dr. Hance, proves that that plant is a species of *Homalium* with larger flowers and more stamens than usual.

Order LII. CUCURBITACEÆ.

Climbing herbs or shrubs; tendrils solitary, lateral, spiral, simple or divided. *Leaves* alternate, petioled, frequently cordate, simple, lobed or pedately divided. *Flowers* monœcious or diœcious, yellow or white, racemed and solitary, less commonly panicled. *Calyx-tube* wholly adnate to the ovary; limb rotate, campanulate, or tubular; lobes 5 (rarely 3), imbricate. *Petals* 5, inserted on the calyx-limb, united in a tube, or nearly or quite free, sometimes fimbriated at the margin, valvate or involute in the bud. *Stamens* inserted at the mouth or about the middle or at the base of the calyx-tube, usually 3 (sometimes 5 or 2), anthers free or united into a tube, one usually 1-celled and the other two 2-celled, cells straight or flexuose or conduplicate, the connective sometimes crested or produced. *Ovary* inferior, usually 3-carpellary; style 1 with 3 stigmas, more rarely styles 2–3–4; placentas usually 3, vertical, in double lines, the edges of the carpellary leaves being often turned in so far that the ovary (even before fertilization) is spuriously 3-celled; ovules usually many, horizontal, rarely pendulous, sometimes few and pendulous from near the top of the ovary. *Fruit* generally berried or fleshy, indehiscent or dehiscing by valves or by a circumscissile lid, often 1-celled, the seeds being often packed in pulp or fibre. *Seeds* usually many, often compressed, horizontal, pendulous, frequently corrugated or sub-spinose on the margins, albumen 0. Distrib. Species 600, in the warmer parts of the whole globe especially in the tropics.

Tribe I. Cucumerineæ. Ovules horizontal; female flowers solitary, never panicled; stamens 3, rarely 2 or 5, free or variously connate; cells of anthers straight, curved or flexuous; ovary bearing 3 (rarely 2 or 5) placentas:—

Anther-cells conduplicate or sigmoid; corolla rotate or campanulate, divided to the base:—

Petals cirrhiferous or fimbriate:—

Seeds only 6, perfect, very large ... ... 1. Hodgsonia.

Seeds numerous, testa not fibrous ... ... 2. Trichosanthes.

Petals entire:—

Calyx-tube of male flower elongate; the anthers included in the tube, cohering, sessile or subsessile, tendrils usually simple ... ... 3. Gymnopetalum.

Calyx-tube of male flower short; anthers usually exserted or sub-exserted, free or slightly coherent:—	
Stamens inserted near the mouth of the calyx-tube; the anthers cohering slightly:—	
Male flowers in racemes or clusters; fruit more or less fibrous, dehiscing by a transverse lid near the apex; tendrils 2–5-fid ...	4. Luffa.
Male and female flowers solitary; fruit not fibrous, very fleshy, indehiscent; tendrils 2-fid	5. Benincasa.
Stamens inserted below the mouth of the calyx-tube; anthers more or less cohering; male flowers in racemes, usually bracteate; tendrils simple	6. Momordica.
Anther-cells straight, the connective produced, the fruit on a slender pedicel	7. Melothria.
Tribe II. Gynostemmeæ. Ovules pendulous; female flowers in panicles; stamens 3–5, anther-cells straight, filaments connate near the base; ovary 3-celled and with 3 placentas, fruit indehiscent	8. Gynostemma.
Tribe III. Zanoneæ. Ovules pendulous, female flowers in panicles or racemes; stamens 5, free, anthers straight; ovary with 3 placentas; fruit cylindric or clavate, dry, 1-celled, dehiscence circumscissile; seeds winged:—	
Calyx-lobes 3, seeds winged all round	9. Zanonia.
Calyx-lobes 5, seeds winged at the apex only ...	10. Alsomitra.

1. Hodgsonia, H. f. & T.

A large climber. *Leaves* coriaceous, 3–5-lobed, long-petioled; tendrils 2–3-fid. *Flowers* large, dicœcious; males in long racemes; bracts oblong, entire, deciduous; females solitary. *Male-calyx* long-tubular, with a shortly campanulate mouth and 5 short teeth; petals 5, connate at the base, very long-fimbriate; stamens 3, filaments very short; anthers exserted, connate, linear, one 1-celled, two 2-celled, cells conduplicate. *Female* calyx and corolla as in the male; ovary globose, 1-celled; style long; stigmas 3, oblong, bifid, exserted; placentas 3, parietal, near the base of the ovary, 2-ovulate on each side. *Fruit* large, depressed-globular, 12-grooved, flesh hard; perfect seeds usually six, each having a smaller, commonly barren one, attached to its side, flat-ellipsoid, with sunk veins.

Hodgsonia heteroclita, Hook. fil. and Thoms. in Proc. Linn. Soc. II, 257. *Stem* very long, often reaching 80 or 100 feet. *Leaves* palmate, somewhat cordate at the base; the lobes entire, rarely slightly denticulate, acute; both surfaces glabrous, minutely reticulate when dry, 6–10 in. long and as broad, the petioles 2 or 3 in. long. *Male racemes* about as long as the leaves; bracts solitary, oblong, acute, ·5 in. long. *Calyx* rusty-tomentose externally, the tube 3 or 4 in. long, with a gland

on each tooth of the mouth. *Petals* sub-obcordate, retuse, about 2 in. long, covered with brown hairs and 3-nerved externally; the inner surface white, the margins fringed with very long spiral villous yellow threads. *Filaments* clavate, anthers forming an inverted cone; *pistil* 0. *Female* flowers often on a separate plant; their peduncles 1 or 2 in. long, occasionally in a raceme much shorter than those of the males; *stamens* 0. *Fruit* turbinate, 4–10 in. in diam., and less from base to apex, covered with short reddish-brown tomentum. *Seeds* 2–3 in. long, and 1·5–2·25 in. broad. Hook. fil. Ill. Himal. Pl. tt. 1, 2, 3; Flor. des Serres, t. 1262, 3; Clarke in Hook. fil. Flor. Br. Ind. II, 606. *Hodgsonia macrocarpa*, Cogn. in DC. Mon. Phan. III, 349. *Trichosanthes macrocarpa*, Bl. Bijdr. 935; Ser. in DC. Prodr. III, 315; Miq. Flor. Ind. Bat. I, Pt. II, 676. *T. hexasperma*, Bl. Bijdr. 935; DC. Prodr. III, 315; Hassk. Pl. Jav. Rar. 192; Miq. Fl. Ind. Bat. l. c. 678. *T. heteroclita*, Roxb. Hort. Beng. 70; Fl. Ind. III, 705; Wall. Cat. 6684. *T. grandiflora*, Wall. Cat. 6685 (not of Blume).

Perak; *Scortechini, Wray, King's Collector.* Malacca; *Maingay.* Penang; *Wallich.* Distrib. Sumatra, Java, Borneo, Burma, Assam, and the base of the Eastern Himalaya.

The earliest name of this species was Roxburgh's (*T. heteroclita*), published in the *Hortus Bengalensis* in 1814. Blume's name *T. macrocarpa* dates from 1826.

2. Trichosanthes, Linn.

Scandent herbs. *Leaves* entire or 3–9-lobed, denticulate; tendrils usually 2–5-fid. *Flowers* dicœcious or occasionally moncœcious, white; male peduncles usually in axillary pairs, one 1-flowered caducous, the other racemose; bracts large or small or 0; female flower solitary. *Male-calyx* long-tubular; teeth 5, lanceolate, entire serrate or laciniate. *Corolla* 5-fid nearly to the base, lobes long-fimbriate; stamens 3; anthers almost included, connate (free in *T. dioica*), long-linear, one 1-celled, two 2-celled, cells conduplicate. *Female* calyx and corolla as in the male. *Ovary* inferior, at the base of the calyx-tube, 1-celled; style filiform, 3-or 6-fid at the apex; placentas 3, parietal; ovules very many, horizontal, half-pendulous. *Fruit* lanceolate or globose, smooth, acute or obtuse at the apex. *Seeds* many, horizontal, packed in pulp, compressed, ellipsoid, sometimes angular on the margin. Distrib. Species 38, in South-East Asia, extending through Malaya to North Australia, also through China to Japan.

Leaves, although often deeply lobed, always simple :—

Male inflorescence ebracteate ... ... 1. *T. cucumerina.*

Male inflorescence bracteate :—

Bracts linear-oblong or narrowly rhomboid, quite entire ... ... 2. *? T. Hearni.*

Bracts small ovate-lanceolate, caudate-acuminate, obscurely dentate, leaves quite smooth and glabrous on both surfaces	3. *T. tricuspidata.*
Bracts very large, ovate to sub-orbicular, deeply incised or simply serrate; calyx-teeth lanceolate; fruit usually globular, rarely ovate	4. *T. palmata.*
Bracts rather large, oblong-ovate, laciniate; calyx-teeth spreading, entire; fruit always ellipsoid ...	5. *T. Wallichiana.*
Leaves usually trifoliolate, but sometimes simple on the same or different plants; leaflets membranous, unequal, much acuminate, the edges undulate-dentate: bracts of male inflorescence small, oblong, their edges with a few long distant teeth	6. *T. Wawræi.*
Leaves always trifoliolate; leaflets coriaceous, shortly and bluntly apiculate or subacute, the edges quite entire; bracts of male inflorescence deltoid, their edges pectinate	7. *T. celebica.*

1. TRICHOSANTHES CUCUMERINA, Linn. Sp. Pl. Ed. 1, 1008. *Stems* slender, angled, puberulous. *Leaves* membranous, orbicular-reniform to broadly ovate in general outline; the edges remotely denticulate, often more or less deeply 3–5 or 7-lobed; the lobes broad with acute but not acuminate apices and often sinuate margins, the base deeply cordate, the sinus often sub-rectangular; upper surface sparsely pubescent or sub-glabrous, the lower deciduously pubescent at first, ultimately sub-scabrid; length 2–4 in. and breadth about the same; petiole 1–2 in., pubescent; tendrils slender, sulcate, puberulous, 2–3-fid. *Male peduncles* rather longer than the leaves, pubescent, bearing a few flowers towards the apex, ebracteate. *Flowers* ·5–1 in. in diam. at the mouth; the tube 2 or 3 times longer, cylindric, a solitary male flower sometimes from the same axil as the peduncle. *Female flower* on a peduncle ·5 in. long, fruit 1–3 in. long, narrowly ovoid, the apex conical, red when ripe; seeds half ellipsoid, compressed, corrugated. Lour. Flor. Cochchin, 588; Ser. in DC. Prodr. III, 315; Roxb. Hort. Beng. 70; Roxb. Flor. Ind. III, 720; Wall. Cat. 6690 A, B, C, D, F; Blume Bijd. 933; Dalz. & Gibs. Bomb. Flor. 102; Miq. Flor. Ind. Bat. I, Pt. I, 676; Naud. in Ann. Sc. Nat. Ser. 4, XVIII, 191; Kurz in Journ. As. Soc. 1877, Pt. II, 98; W. & A. Prodr. 350; Miq. Flor. Ind. Bat. I, Pt. I, 676; Thwaites Enum. Pl. Ceyl. 126; Benth. Flor. Austral. III, 314; Clarke in Hook. fil. Flor. Br. Ind. II, 609; Cogn. in DC. Mon. Phan. III, 358. *T. laciniosa*, Klein in Herb. Rottler. *T. pilosa*, Wall. Cat. 6691. *Bryonia umbellata*, Wall. Cat. 6700 D. *Cucumis Missionis*, Wall. Cat. 6728.

PERAK; *King's Collector* 5622. DISTRIB. Malayan Archipelago; British India.

The Perak plant has larger flowers than any Indian specimen, and I refer it to *T. cucumerina* with some hesitation.

2. ? Trichosanthes Hearni, F. Mull. in Benth. Flor. Austral. III, 315. *Stem* slender, glabrous, sulcate. *Leaves* membranous, broadly ovate, the apex acute or acuminate, the base deeply and widely cordate; the edges rather remotely denticulate, sometimes remotely sinuate-lobed; the upper surface glabrous and shining, the lower densely and minutely pubescent, the nerves, subglabrous and stout; length 4–8 in., breadth 3·5–6 in., petiole 1–1·75 in. *Male peduncles* often in pairs, axillary, longer than the leaves, slender, puberulous, angled; floriferous in the upper half; bracts linear-oblong, entire, about ·25 in. long; several of the lower ones narrowly rhomboid, all pubescent, flowers under 1 in. in diam. at the mouth; calyx-tube cylindric, the mouth narrowly infundibuliform, puberulous; the lobes of the mouth narrow, acute. *Female flower* and fruit unknown.

Andamans; *Kurz, King's Collector.*

The late Mr. Kurz collected a single specimen of this on Rutland island (in the Andaman group) many years ago, and he referred it in the Calcutta Herbarium to *Trichosanthes reniformis*, Miq. He also suggested for it the name *Trichosanthes herpetospermum*,—a name which he never published. In 1890 several specimens of the plant were collected near Port Mowat, on the South Andaman. Specimens of this second gathering, as well as of Kurz's original gathering, were sent by me to Mr. C. B. Clarke who found that they closely resemble, and are probably identical with, *T. Hearni*, an Australian species named by the late Baron von Müller, and of which an imperfect description was published by Mr. Bentham in his Flora of Australia. And to this species I now doubtfully refer both the Andaman gatherings.

3. Trichosanthes tricuspidata, Lour. Flor. Cochinchin. II, 723. *Stem* stout, sulcate, smooth, glabrous. *Leaves* thinly coriaceous, ovate-sub-triangular, with from 3–5 stout triangular broad, acute or acuminate, spreading lobes, the base broadly cordate, the edges remotely and minutely denticulate or subentire, glabrous on both surfaces; length and breadth 3–5 in.; petiole slender, 1–1·5 in.; tendrils 3-fid. *Male peduncles* floriferous for half their length, longer than the leaves, stout, glabrous or puberulous, 10–20 flowered; bracts thick, rigid, ovate-lanceolate, caudate-acuminate, obscurely dentate or entire; calyx-tube tapering to the base, shortly but densely tomentose, the lobes caudate-lanceolate with a few irregular distant teeth; corolla 1·5 in. in diam. *Female flower* from the same axil as the male peduncle, the tube 1·5 in. long, the corolla ·75 in. in diam.; *fruit* ovoid when young, subglobular and 2 in. in diam. when ripe, smooth, yellow with numerous small black pustules, the pulp thick; the seeds in the very centre, broadly ovate, compressed, ·5 in. long and ·4 in. broad. Blume Bijdr. 935; Ser. in DC. Prodr. III, 315; Roem. Syn., fasc. II, 95; Miq. Flor. Ind. Bat. I, Pt. I, 676; Cogniaux in DC. Mon. Phan. III, 374.

Penang; *Curtis* 1947. Perak; *Scortechini* 376; *King's Collector* 2202, 5111; *Wray* 4029.

This resembles *T. palmata*, Roxb. and *T. Wallichiana*, Wight; but the lobes of the leaves are shallower and their surfaces more glabrous and not at all scabrid, while the bracts of the male inflorescence are much narrower and very acuminate; and their edges, instead of being laciniate, are entire or at most obscurely dentate.

4. TRICHOSANTHES PALMATA, Roxb. Hort. Beng. (1814) p. 70. *Stem* stout, angled and sulcate, glabrous. *Leaves* thickly membranous, broadly ovate or orbicular in general outline, deeply cut down to about the middle into 3–7 lobes; the lobes acute or acuminate, their edges entire or denticulate, the base deeply but usually narrowly cordate; upper surface more or less scabrous or scabrid, glabrous, glandular near the apex of the petiole, the lower glabrous or somewhat pubescent, length and breadth 2–6 in.; petiole rather slender, 1 to 3 in. long; tendrils 2- or 3-fid. *Male* racemes sometimes in pairs, longer than the leaves, few-flowered; bracts large, ovate to sub-orbicular, deeply incised or simply serrate, glabrous or with viscid hairs; calyx-tube 1·5 in. long, tomentose or glabrous, the teeth lanceolate, the edges deeply serrate or laciniate. *Female* flower solitary, on a peduncle less than 1 in. long; fruit ovoid, pointed when young, globular when ripe, 1·5–2 in. in diam. *T. palmata*, Roxb. Flor. Ind. III, 704; Wall. Cat. 6688 (excl. C, F); W. & A. Prodr. 350; Wight Ill. t. 104, 105; Dalz. & Gibs. Bomb. Flor. 103. *T. laciniosa*, Wall. Cat. 6689 A, B. *T. aspera*, Heyne in Herb. Rottler. *T. tricuspis*, Miq. Flor. Ind. Bat. I, Pt. I, 679. *T. cordata*, Wall. Cat. 6686 (excl. A and B). *T. anguina*, Wall. Cat. 6687 (F partly); Voigt Hort. Bot. Sub. 58. *T. bracteata*, Kurz in Journ. As. Soc. Beng. 1877, Pt. II, 99; Cogn. in DC. Mon. Phan. III, 375. *T. pubera*, Blume Bijdr. 936; Ser. in DC. Prodr. III, 315; Roem. Syn. fasc. II, 95; Miq. Flor. Ind. Bat. I, Pt. I, 675. *Cucurbita Melopepo*, Wall. Cat. 6725. *Involucraria Wallichii*, Seringe in DC. Prodr. III, 318. *Bryonia palmata*, Wall. Cat. 6711 F.

PERAK; *Wray* 2181, 2371, 2478, 3049; *King's Collector* 1848, 4983, 10579. ANDAMANS; *King's Collector*.

The fruit when ripe is usually globular; but there are specimens in the Calcutta Herbarium which have oval fruit like *T. Wallichiana*, Wight, and at the same time the scabrid leaves and laciniate calyx lobes which are supposed to be characteristic of this species.

5. TRICHOSANTHES WALLICHIANA, Wight in Ann. and Mag. Nat. Hist. VIII, ·70. *Stem* robust, angled and sulcate, glabrous. *Leaves* membranous, sub-orbicular in general outline, divided half-way down or more into 3–5 oblong or triangular acute lobes; the lobes sparsely denticulate, the lower on each side sometimes lobulate, the base deeply and widely cordate; both surfaces glabrous and usually smooth, the upper sometimes slightly scabrid and with a few glands near the apex of the petiole; length and breadth 3–7 inches, tendrils 3-fid. *Male*

peduncles at first shorter than the leaves, elongating with age; bracts oblong-ovate, their edges laciniate; calyx-tube glabrous, the teeth spreading, entire; petals obovate, laciniate. *Female flower* solitary; fruit ellipsoid, obtuse, smooth, 2–4 in. long. Cogn. in DC. Mon. Phan. III, 368. *Involucraria Wallichiana*, Ser. in Mem. Hist. Nat. Geneve III, Pt. I, 25 t. 5; in DC. Prodr. III, 318; Roem. Syn. fasc. 2, p. 98. *Trichosanthes multiloba*, Clarke in Hook. fil. Flor. Br. Ind. II, 607 (not of Miq.). *T. grandibracteata*, Kurz in Journ. As. Soc. Beng. XLVI, 98, 99.

Pahang; *Ridley* 244. Singapore; *Ridley* 296, 446, 4762. Penang; *Curtis* 2004. Perak; *Scortechini* 508 and 600.

A species scarcely separable from *T. pubera*, Bl., of which in my opinion it would better be treated as a variety.

6. Trichosanthes Wawræi, Cogn. in DC. Mon. Phan. III, 384. *Stem* slender, sub-glabrous, sulcate. *Leaves* membranous, trifoliolate or simple; leaflets of the trifoliolate form unequal, the middle one oblanceolate, the lateral ones angularly auriculate or lobulate at the base on the outer side, the edges of all subentire or sparsely denticulate and the apices much acuminate, all with slender petiolules ·25–·3 in. long; the lower surface reticulate when dry, glabrous, the upper sparsely and minutely pustulate and glabrous; length of the leaflets 2·5–5 in., breadth ·75–1·5 in., petiole 1·25–2 in.; the simple form triangular-oblong, tapering gradually to the apex, the base with 2 short sub-horizontal lobules, length 2·5–5 in.; tendrils short, simple or bifid. *Male peduncles* shorter than the leaves, very stout, sulcate, glabrous, many-flowered; bracts small, oblong, their edges with a few long teeth, the flowers extending for half their length; calyx ·5 in. long, narrowly campanulate, suddenly contracted into the tube, the teeth erecto-patent or recurved, lanceolate, acuminate, entire. *Female flower* with cylindric tube slightly dilated at the apex, the teeth as in the male; petals white, yellowish at the base, oblong, 3-nerved, the fimbriæ long, the external surface minutely papillose; ovary, glabrous, ovoid-oblong; *fruit* subglobular when young, oblong when ripe, smooth, red with orange or white stripes; *seeds* compressed, oblong-ovoid, ·6 in. long.

Perak; *King's Collector* 2203, 4519, 4668, 5380, 5405, 10176. *Wray* 2382; *Scortechini*. (Singapore; *Wawra* 241 in Herb. Vindob. *fide* Cogniaux.)

Cogniaux describes this as having its leaves always trifoliolate. But in some of the Perak specimens both trifoliolate and simple leaves as above described are to be found; in a few only simple leaves, and in the majority only trifoliolate.

7. Trichosanthes Celebica, Cogn. in DC. Mon. Phan. III, 385. *Stem* slender, glabrous, sulcate, sometimes hairy at the nodes. *Leaves* coriaceous, trifoliolate; the leaflets unequal in size, the middle one

the largest, ovate-oblong, shortly acuminate or sub-acute; the base slightly narrowed, oblique, not cordate, the edges quite entire; both surfaces glabrous, minutely reticulate when dry, the upper minutely punctate; length of leaflets 3–4·5 in., breadth 1·5–2·5 in.; petiole 1–1·5 in. long, stout; petiolules ·15 in.; tendrils short, bifid. *Male peduncle* shorter than or equal to the leaves, stout, deeply sulcate, adpressed-pubescent, floriferous for half its length; bracts deltoid, pectinate, tawny glandular-tomentose. *Calyx-tube* narrowly infundibuliform, minutely pubescent; the teeth lanceolate, acuminate, entire, erecto-patent. *Female flower* unknown. *Fruit* ovate, smooth, 8 in. long and 3 or 4 in. in diam. with a leathery rind, bright red with 10 yellow stripes when ripe; *seeds* obliquely oblong, compressed, smooth, ·6 in. long and ·4 in. broad.

Perak; *Wray* 2460; *Scortechini*; *King's Collector* 4033. Singapore; *Ridley* 2051, 4592, 6783; *Hullett* 247. Distrib. Celebes, Beccari.

3. Gymnopetalum, Arn.

Twining herbs, tendrils usually simple or 2-fid. *Leaves* petioled, 5-angular, nearly entire or deeply lobed. *Flowers* white (or yellow ?), somewhat large; occasionally monœcious; male peduncles in fully developed plants 2 from each axil, the earlier 1-flowered, the later longer with racemes, either often suppressed; bracts on the racemes persistent, large, lanceolate, incised or small; females 1-flowered, usually in separate axils. *Male* calyx-tube long, contracted near the mouth, limb of 5 lanceolate segments; petals 5, not fimbriate on the margin; stamens 3; anthers included, connate, elongate, 1–2-celled, cells conduplicate; rudiments of the ovary 1 or 3, small, linear. *Female* calyx and corolla as in the male; ovary oblong; style long, stigmas 3, short linear; ovules horizontal, many; placentas 3, long, vertical. *Fruit* ovate-oblong, acute at both ends. *Seeds* many or few, ellipsoid, compressed, margined, nearly smooth. Distrib. Species 6; in India, China and Malaya.

Leaves not lobed	1. *G. integrifolium.*
Leaves lobed :—	
Leaves 3–5-lobed half way down, reniform to triangular in general outline; lobes triangular acute, not lobulate	2. *G. Cochinchinensis.*
Leaves deeply 5-lobed, the lobes lobulate-sinuate, blunt, their general outline orbicular	3. *G. quinqueloculare.*

1. Gymnopetalum integrifolium, Kurz in Journ. As. Soc. Beng. XL, 58. Creeping, only a few feet long; *stem* scabrid, tendrils simple or bifid. *Leaves* reniform, obtuse; the margin undulate or denticulate, not lobed; upper surface very scabrid, the lower softly tomentose,

length 1·75–2 in., breadth ·8–2·25 in., petiole ·45–·65 in. *Flowers* monœcious, all solitary, axillary and bracteate, the *male* peduncle 1·5 in. long, the female only ·25 in. *Calyx-tube* in both sexes elongate, densely covered with long brown hairs; the teeth 5, lanceolate; *corolla* white, about 1·35 in. in diam., its lobes obovate, entire, pubescent, veined. *Fruit* about ·75 in. in diam., globular, smooth, orange-red. Kurz in Flora for 1871, p. 295; Clarke in Hook. fil. Flor. Br. Ind. II, 612. *Cucumis integri folius*, Roxb. Flor. Ind. III, 724; Wall. Cat. 6730. *Trichosanthes officinalis*, Wall. Cat. 6694. *T. integrifolia*, Kurz in Journ. As. Soc. Beng. XLVI, Pt. II, 99; Cogn. in DC. Mon. Phan. III, 386.

Perak; *Wray* 2167; *Ridley* 3107.

Kurz named this *Gymnopetalium integrifolium* in the Journal of the Asiatic Society of Bengal which was issued in March 1871. His publication of it in *Flora* dates only from October of the same year.

2. Gymnopetalum Cochinchinensis, Kurz in Journ. As. Soc. Beng. XLVI, Pt. II, 57. *Stems* slender, angled, slightly scabrid-hairy. *Leaves* reniform to triangular in outline, 5-angled or 3–5-lobed half way down; the lobes triangular, acute, the edges crenate-dentate and thickened, the base deeply and widely cordate, both surfaces more or less scabrid, length 2 to 4 in., breadth 2 to 3·5 in.; petiole scabrid-pubescent, 1–1·5 in. long; tendrils simple or bifid. *Male peduncle* longer than the leaves, the flowers racemose, or sometimes solitary; bracts large, incised-serrate, ·5–·75 in. long; calyx-tube sub-cylindric, villous, the mouth closed by deflexed hairs, the teeth erecto-patent; petals ovate-oblong, ·5 in. long, entire or sub-crenate. Peduncle of *female flower* shorter than the leaf-petiole, sparsely puberulous; *fruit* about 2 in. long. and ·75 in. in diam., somewhat scabrid, 10-ribbed, orange-red, the beak long; *seeds* about ·25 in. long. Kurz in Flora for 1871, p. 295; Clarke in Hook. fil. Flor. Br. Ind. II, 611; Cogn. in DC. Mon. Phan. III, 391. *Bryonia cochinchinensis*, Lour. Flor. Cochinch. 595; DC. Prodr. III, 305. *Momordica tubiflora*, Roxb. Flor. Ind. III, 711, (not of Wallich). *Tripodanthera cochinchinensis* Roem. Synops. II, 48. *Scotanthus tubiflorus*, Naud. in Ann. Sc. Nat. Ser. 4, XVI. 172, t. 3. *Trichosanthes cucumerina*, Wall. Cat. 6690 E. *T.*? *Fatoa*, Ham. in Wall. Cat. 6695. *Bryonia grandis*, Wall. Cat. 6700 K. L. *Trichosanthes costata*, Bl. Bijdr. 933; Ser. in DC. Prodr. III, 314.

Pahang; *Ridley* 2446. Kedah; *Curtis* 2592. Perak; *King's Collector* 10563. Distrib. British India, Malayan Archipelago, China.

3. Gymnopetalum quinquelobum, Miq. in Flor. Ind. Bat. I, Pt. I, 681. A slender annual; *stem* striate, with short pubescence or glabrous. *Leaves* orbicular in general outline, deeply 5-lobed; the lobes sinuately 2- or 3-lobulate, or oblong and subentire; both surfaces sparsely covered with thick whitish hairs with bulbous bases, length

1·5–2·25 in., breadth 1·75–3 in.; petiole ·75–1 in., sparsely pubescent. *Male flowers* usually solitary, rarely in racemes slightly longer than the leaves, shortly pilose; the bracts oblong, serrate, ·5 in. long. *Calyx-teeth* erect, entire or dentate; petals oblong, acute, puberulous outside. Peduncle of *female flower* ·5–1 in. long. *Fruit* brilliant scarlet when ripe, oblong-fusiform, acutely ribbed, shortly pubescent, 1·5–2 in. long; *seeds* blackish, rugulose, obscurely marginate, narrowed to the base, ·2 in. long and about ·1 in. broad. Clarke in Hook. fil. Flor. Brit. Ind. II, 611; Cogn. in DC. Mon. Phan. III, 392. *Scotanthus Porteanus*, Naud. in Ann. Sc. Nat. Ser. V, Vol. 5, 25. *Gymnopetalum heterophyllum*, Kurz in Trim. Journ. Bot. for 1875, p. 326.

Andaman and Nicobar Islands; *Kurz.*

4. Luffa, Cav.

Climbers, large or small, pubescent or nearly glabrous; tendrils 2–5-fid. *Leaves* cordate, usually 5-angular or 5-lobed; petiole without glands at its apex. *Flowers* yellow or white, monœcious, males and females often from the same axil; females solitary or panicled, males on long or short racemes or clustered. Male; calyx-tube turbinate, lobes 5, triangular or lanceolate; petals 5, obovate; stamens 3, rarely 5, filaments 3, free or connate; anthers exserted, free, one 1-celled, the others 2-celled; cells sigmoid, often on the margin of the broad connective. Female; calyx-tube shortly produced above the ovary; lobes and corolla as in the male; ovary oblong, style cylindric, stigma 3-lobed; ovules very many, horizontal. *Fruit* large or small, oblong (not spherical), smooth or angular or spinous, ultimately fibrous, not succulent, 3-celled, usually circumscissile near the apex. *Seeds* many, oblong, compressed. Distrib. Species 6, in the warmer regions of the Old World and one in America.

Luffa Ægyptiaca, Miller Gard. Dict. ed. VIII, ex Hook. fil. in Oliv. Flor. Trop. Afr. II, 530. *Stem* stout, many yards in length; the young branches glabrous, angled and very deeply sulcate; tendrils 2–3-fid. *Leaves* large, reniform or reniform-orbicular in general outline, palmately 5-lobed; the lobes acute, lobulate and denticulate; both surfaces scabrous or scaberulous, punctate, glabrous except the pubescent nerves on the lower surface; length 2·5–6 in., breadth 3–9 in., petiole 2–2·5 in., pubescent, eglandular. *Male peduncle* 6 in. long; the flowers 4–12, crowded near the summit, 1·5–2 in. in diam., their pedicels short, each with a small ovate viscid bract, or ebracteate; petals 5, yellow with green veins; stamens 5. *Female flower* solitary on a peduncle 1–3 in. long, usually from the same axil as the male inflorescence; fruit 5–12 in. long, sub-cylindric, with numerous bold ridges; *seeds* usually black,

narrowly winged, smooth or slightly tubercled. DC. Prodr. III, 303; Clarke in Hook. fil. Flor. Brit. Ind. II, 614. *Cucumis aegyptiacus*, Vesl. in Alp. Pl. Aegypt. p. 199, t. 58, 59. *Momordica Luffa*, Linn. Spec. ed. 1, 1009. *L. pentandra*, Roxb. Flor. Ind. III, 712; W. & A. Prodr 343; Wall. Cat. 6751; Wight Ic. t. 499. *L. racemosa*, Roxb. l. c. 715. *L. clavata*, Roxb. Hort. Beng. 104; Flor. Ind. III, 714. *L. acutangula*, W. & A. l. c., (not of Roxb.). *L. cylindrica*, Roem. Synops. II, 63; Naud. in Ann. Sc. Nat. Ser. 4, XII, p. 119; Kurz in Journ. As. Soc. 1877, Pt. II, 100; Cogn. in DC. Mon. Phan. III, 456. *L. Petola and L. Cattu-picinna*, Seringe in DC. l. c. *L. Parvala*, Wall. Cat. 6758. *L. Gosa, hederacea and Satpatia*, Wall. Cat. 6753, 6755, 6757. *Bryonia cheirophylla*, Wall. Cat. 6715 A.

Perak; *King's Collector* 1020. Distrib. British India and in the Tropics generally; often cultivated.

The synonymy of this species occupies more than a page in Cogniaux's excellent Monograph of the *Cucurbitaceæ* in De Candolle's *Suites au Prodromus*, Vol. III. I have followed Messrs. Cogniaux and C. B. Clarke in reducing here Roxburgh's three species *L. pentandra*, *L. racemosa* and *L. clavata*, but I do so with considerable hesitation. Neither in flower nor leaf do Roxburgh's figures of his *L. clavata* and *L. pentandra* much resemble each other, whatever relation either of them may bear to *M. Aegyptiaca*, Miller. The material of the Indian species in the Calcutta Herbarium is very unsatisfactory, and I do not think the last word on them will be said until they have been carefully cultivated side by side, and studied as they grow.

5. Benincasa, Savi.

A large climber, softly hairy, tendrils 2- or 3-fid, rarely simple. *Leaves* cordate, reniform-orbicular, more or less 5-lobed; petiole without glands. *Flowers* large, yellow, monœcious, all solitary, without bracts. Male; calyx-tube campanulate; lobes 5, leaf-like, serrate; petals 5, nearly separate, obovate; stamens 3, inserted near the mouth of the tube; anthers exserted, free, one 1-celled, two 2-celled, cells sigmoid. Female; calyx and corolla as in the male; ovary oblong, densely hairy; style thick, with 3 flexuose stigmas; ovules numerous, horizontal; placentas 3. *Fruit* large, fleshy, oblong, pubescent, indehiscent. *Seeds* many, oblong, compressed, margined.

Benincasa hispida, Cogn. in DC. Mon. Phan. III, 513. Annual. *Leaves* on long petioles, reniform-rotund, with 5–9 small lobes, all toothed, 4–6 in. long and about the same in breadth; petioles cylindric, longer than the leaves, tendrils usually 3-fid. *Male flowers* axillary, solitary, peduncled, yellow, 1·5 in. in diam.; teeth of the calyx obtusely pinnatifid or undulate. *Female flowers* like the male, axillary, solitary, peduncled; calyx as in the male. *Fruit* sub-cylindric, obtuse at the ends, smooth, hairy when young but glabrous and with a whitish

bloom when ripe, 12–18 in. long and from 8–10 in. in diam. *Seeds* white with tumid margins, ·5 in. long and ·15 in. broad. *Cucurbita hispida*, Thunb. Flor. Jap. (1784), p. 322; Bl. Bijdr. 931; Wall. Cat. 6723. *C. Pepo*, Lour. Flor. Coch.-Chin. p. 593; Roxb. Flor. Ind. III, 718 (*not of Linn.*). *Benincasa cerifera*, Savi in Bibl. Ital. IX, 159; DC. Prodr. III, 303; W. et Arn. Prodr. 344; Miq. Flor. Ind. Bat. I, Pt. I, 665; Clarke in Hook. fil. Flor. Br. Ind. II, 616. *Cucurbita villosa*, Bl. Bijdr. 931; DC. Prodr. III, 317. *C. farinosa*, Bl. Bijdr. 931. *Cucurbita alba*, Roxb. in E. Ind. Comp. Mus., tab. 457 (ex W. et Arn.). *Gymnopetalum septemlobum*, Miq. Flor. Ind. Bat. I, Pt. I, 679. *Lagenaria dasystemon*, Franch. et Sav. Enum. Pl. Jap. I, 173.

Nicobar and Andaman Islands; cultivated, *King's Collectors.* Distrib.—Malayan Archipelago, Australasia, China, Philippines, British India; cultivated.

6. Momordica, Linn.

Climbing by simple tendrils. *Leaves* cordate, petioled, undivided in the Indian species. *Flowers* yellow or white, monœcious or diœcious, females solitary, peduncled; males solitary or racemed, bracteate or not. Male; calyx-tube short, campanulate with 2–3 basal oblong incurved scales (ex Hook. f.) lobes 5; *corolla* 5-partite nearly to the base; stamens 3; filaments short; anthers at length free, one 1-celled, one or two 2-celled, cells conduplicate or horse-shoe-shaped. Female; calyx and corolla as in the male; ovary oblong; style long, stigmas 3; ovules very many; placentas 3, horizontal. *Fruit* oblong or spherical, rough or smooth, indehiscent or 3-valved, many- or few-seeded. *Seeds* obovate or complanate, smooth, corrugate or sculptured. Distrib.—Species 25, chiefly in the warmer parts of Africa, several in Tropical Asia, a few in Tropical America.

Leaves entire:—		
Male pedicels ebracteate	1.	*M. Clarkeana.*
Male pedicels with a bract close to the flower ...	2.	*M. subangulata.*
Leaves 3-lobed, the lobules entire	3.	*M. Cochinchinensis.*
Leaves 5–7-lobed, the lobules sinuate-dentate or lobulate	4.	*M. Charantia.*

1. Momordica Clarkeana, n. spec. King. *Stem* slender, 4-angled, glabrous, 20–30 feet long. *Leaves* thinly membranous, broadly ovate, never lobed, acute, the base deeply cordate or emarginate, both surfaces quite glabrous; length 3–5 in., breadth 3–4 in.; petiole 1·5–2 in., slender, eglandular. *Male flowers* ·75 in. in diam., on filiform pedicels several form a leaf-axil, or in few-flowered lax racemes; calyx-lobes puberulous, broad, obtuse, their margins membranous and glabrous; *corolla* deeply divided into 5 broad blunt lobes, puberulous. *Female flower* unknown.

Fruit vermillion when ripe, sub-globular, apiculate when young, glabrous; without ridges or papillæ, 2–2·5 in. in diam.; *seeds* as in *M. Cochinchinensis*.

PERAK; *Scortechini* 1605; *King's Collector* 8340; *Wray* 3273.

This species is allied to *M. Cochinchinensis* and has seeds exactly alike those of that species. But the leaves of this are of thinner texture than those of *M. Cochinchinensis*, and they are not lobed; moreover the petiole in this is eglandular, and the fruit is quite free from ridges or papillæ of any kind. I have named it in honour of my friend Mr. C. B. Clarke who believes with me that it is a hitherto undescribed species.

2. MOMORDICA SUBANGULATA, Blume Bijdr. 928. *Stem* slender, glabrous, angled, sulcate, several feet long; tendrils single. *Leaves* broadly ovate, deeply cordate at the base, the apex acute, the edges with remote cartilaginous teeth; upper surface glabrous, the lower with sparse small adpressed hairs; length 1·75–2·25 in., breadth 1·25–1·65 in.; petiole 1 in. long, glabrous, eglandular. *Male* peduncle ·5–1 in. long, pubescent; the bract close to the flower broader than long, its apex obtuse, its base cordate, minutely pubescent, the veins prominent; flower nearly 1 in. in diam.; calyx deep purple; its lobes oblong, obtuse, glandular, nearly ·2 in. long; corolla yellow, partite to the base, the segments oblong. *Female* flower unknown; *fruit* ellipsoid, 2–3 in. long, obscurely ribbed, the ribs broken into joints. Ser. in DC. Prodr. III, 316; Roem. Syn. fasc. 2, p. 58; Miq. in Flor. Ind. Bat. I, Pt. I, 664; Kurz in Journ. As. Soc. Beng. XLVI, Pt. II, 102; Cogn. in DC. Mon. Phan. III, 443.

PERAK; *Scortechini* 399. DISTRIB. Java, Brit. India.

3. MOMORDICA COCHIN-CHINENSIS, Spreng. Syst. Veg. III, 14. A powerful climber ascending tall trees; *stem* angled, glabrous. *Leaves* in general outline sub-orbicular or broadly ovate, the base cordate or emarginate, usually 3-lobed to the middle or below it (sometimes 5-lobed), the margins with sparse umbilicate glands, both surfaces glabrous, length 4–7 in., breadth nearly the same; petiole 2–3 in. long, glandular at the middle and upper part; tendrils long, stout, simple. *Male peduncle* 2–6 in. long with an orbicular-reniform cucullate bract at its apex embracing the flower-bud; calyx-segments dark, coriaceous, hairy; corolla 1·75–3 in. across, white tinged with yellowish, some of the petals with black spots at the base, others with yellow glands. *Female* peduncle 1–2 in. long, (longer in fruit), with a small bract about the middle. *Fruit* ovate, pointed at the apex, fleshy, bright red and covered with conical points but not ribbed; 4–5 in. long; seeds numerous, blackish, ovate, compressed, sculptured, the margins undulate-sub-lobulate. Kurz in Journ. As. Soc. Beng. XLVI, Pt. 2, 102; Clarke in Hook. fil. Flor. Br. Ind. II, 618; Cogn. in DC. Mon. Phan. III, 444.

M. mixta, Roxb. Hort. Beng. 70; Flor. Ind. III, 709; Wight & Arn. Prodr. 349; Roem. Syn., fasc. 2, 59; Hook. in Bot. Mag. t. 5145; Miq. Flor. Ind. Bat. 1, Pt. 1, 664; Naud. in Ann. Sc. Nat. Ser. 4, XII, 132. *M. dioica*, Wall. Cat. (not of Roxb.) 6750, A to F. *Muricia Cochinchinensis*, Lour. Flor. Coch.-Chin. 733; Ser. in DC. Prodr. III, 318.

Perak; *Scortechini, King's Collector, Wray;* a common plant. Distrib.—British India, Malaya, Philippines.

4. Momordica Charantia, Linn. Sp. Pl. ed. I, p. 1009. *Stem* slender, branching, striate, pubescent, sometimes tomentose towards the apex, 3–6 feet long. *Leaves* reniform-orbicular in general outline, 1–3 in. in diam., deeply divided into 5–7 lobes; the lobes sinuate-dentate or lobulate and mucronate, constricted at the base, glabrous or slightly pubescent; petiole 1–3 in.; the tendrils simple. *Male peduncle* slender, with a reniform or orbicular bract at or below the middle. *Male flower* ·35–·75 in. in diam.; the calyx-lobes ovate, acute; *corolla* somewhat irregular, yellow, its segments obtuse or emarginate, anther cells much bent. *Female peduncle* 2–4 in. long, slender, bracteate near the base; ovary fusiform, muricate. *Fruit* 1–3 in. long, ovoid, tapering to both ends, many-ribbed and bearing numerous triangular tubercles. *Seeds* compressed, sometimes almost 3-toothed, the margins corrugated, the sides sculptured. Lour. Flor. Cochchin. II, p. 598; Bot. Mag. t. 2455; Ser. in DC. Prodr. III, 311; Roxb. Flor. Ind. III, 707; Wight and Arn. Prodr. 348; Torr. and Gray Flor. N. Amer. I, 543; Wight Ic. tab. 504; Wight Ill. t. 105 *bis*; Miq. Flor. Ind. Bat. I, Pt. I, 663; Cogn. in Mart. Flor. Bras., fasc. 78, p. 14; Clarke in Hook. fil. Flor. Br. Ind. II, 616. Cogn. in DC. Mon. Phan. III, 436. *M. muricata*, Willd. Spec. IV, 602; Roxb. Flor. Ind. III, 707; W. & A. Prodr. 348; Miq. Flor. Ind. Bat. I, Pt. I, 663. *M. humilis*, Wall. Cat. 6747. *M. anthelmintica*, Schum. et Thou. Flor. Guin. 423. *M. Roxburghiana*, Don Gen. Syst. Gard. III, 35. *M. macropetala*, Mart. in Hook. Journ. Bot. V, 504.

Perak; *Scortechini.* Distrib. Malayan Archipelago, British India, China, Tropical Africa and America.

7. Melothria, Linn.

Climbing herbs; tendrils simple or 2-fid. *Leaves* petioled, deltoid, truncate or hastate, entire or deeply 3-lobed, little hairy, often punctate. *Flowers* small, white, usually monœcious, males and females often from the same axil; male pedicels long, clustered (rarely sub-solitary) in the axils, or clustered on long racemes resembling branches without leaves; female long-pedicelled. *Male;* calyx-tube short, teeth 5, small; corolla 5-partite; stamens 3, inserted in the middle of the calyx-tube; anthers free, one 1-celled, two 2-celled; cells free, straight, simple, more or less

lateral; connective prolonged, undivided, glabrous. *Female* calyx and corolla as in the male; ovary oblong, style long; stigmas 3, subglobose; ovules many, horizontal; placentas 3, vertical. *Fruit* indehiscent, globose, acute or fusiform, subrostrate. *Seeds* many, small, oblong, much compressed, obscurely margined, smooth or very nearly so. DISTRIB. Species about 55, all tropical.

Fruit not beaked :—				
Fruit globular, glabrous	...	...	...	1. *M. affinis.*
Fruit oblong, glabrous	...	...	...	2. *M. indica.*
Fruit beaked :—				
Fruit fusiform, beaked, velvety	...	...	...	3. *M. marginata.*

1. MELOTHRIA AFFINIS, n. spec. King. Scandent; the stem slender, glabrous, 4-angled and deeply sulcate, not rooting at the nodes; the tendrils rather stout, bifid. *Leaves* ovate-cordate to triangular, often 3–5-lobed, the edges denticulate; upper surface densely scabrid-hispid, the hairs white; the lower paler and with hairs of the same colour but sparser and more slender; length 1·35–4·25 in., breadth 1·5–3·25 in., petiole ·5–1 in. *Male* and *female* flowers often from the same axil; the *males* in many-flowered umbels on pedicels twice as long as the leaf-petioles, pubescent below, glabrous above; pedicels about 20, slender, unequal, dilated at the apex, glabrous, ·25–·35 in. long. *Flowers* ·1 in. in diam., globose, pubescent, with 5 slender short diverging subulate teeth below the mouth. *Petals* not seen; *anthers* 3, straight, the connective not produced. Pedicel of the *fruit* shorter and stouter than the peduncle of the male umbel, glabrous. *Fruit* globose, glabrous, thin-walled, many-seeded, red when ripe, ·4–·5 in. in diam.; *seeds* obovoid, pitted, somewhat compressed, pale.

PERAK; *Scortechini* 495; *Wray* 860, 1404; *Curtis; King's Collector* 1069, 2539. BORNEO; BANGERMASSING; *Motley* 167.

Mr. C. B. Clarke, who was so good as to examine my specimens of this species and to compare them for me at Kew, assures me that the Perak specimens agree exactly with Motley's 167. Mr. Clarke considers the species as closely allied to *M. marginata*, Cogn. from which it differs by its globular glabrous fruit.

2. MELOTHRIA INDICA, Lour. Flor. Coch. China, 35. *Stem* slender, filiform, glabrous, 3–6 feet long, often rooting at the nodes, the tendrils simple. *Leaves* triangular-cordate, acute, entire or 3-lobed (sometimes deeply); the nerves somewhat hairy, otherwise glabrous, the lobes irregularly denticulate or lobulate; length 1·25–2 in. and breadth the same, petiole ·6–1 in. *Male pedicels* solitary or in racemes of 2 or 3 on peduncles 1 in. long; calyx-tube broadly campanulate, its teeth subulate, spreading; *corolla* white, puberulous, its segments ovate-oblong. *Stamens* with thick obconic filaments, glabrous or sparsely villose; *anthers* ovate-oblong, ciliate, the connective much produced. *Peduncle*

of *female* flower solitary, longer that the leaf-petiole. *Fruit* oblong, glabrous, white, ·5–·75 in. long. *Seeds* ovate, attenuate at the base. Ser. in DC. Prodr. III, 313; Naud. in Ann. Sc. Nat., Ser. 4, XVI, 169 t. 2; Hance Suppl. Hongkong Flora, 104; Kurz in Journ. As. Soc. Beng. XLVI, Pt. II, 105; Clarke in Hook. fil. Flor. Br. Ind. II, 626. *Bryonia geminata*, Blume Bijd. 924; Ser. in DC. Prodr. III, 305; Roem. Syn., fasc. II, 35; Miq. Flor. Ind. Bat. I, Pt. I, 659. *B. tenella*, Roxb. Flor. Ind. III, 725. *Aechmandra indica*, Arn. in Hook. Journ. Bot. III, 274; Wight in Ann. and Mag. Nat. Hist. VIII, 267; Miq. Flor. Ind. Bat. I, Pt. I, 658.

Selangore; *King's Collector* 360. Distrib. British India, Cochin-China, Philippines, Hongkong.

3. Melothria marginata, Cogn. in DC. Mon. Phan. III. 593. *Stem* creeping, rooting at the nodes, angular, sulcate, glabrous; the tendrils slender, simple, puberulous. *Leaves* ovate-cordate or more or less 3-lobed, acute; the edges minutely and distantly denticulate; the upper surface coarsely and distinctly and the lower minutely and more closely strigose, the nerves on both pubescent; length 1–1·25 in., breadth 1–1·75 in.; petiole ·75–1·5 in., tomentose. *Male flowers* umbellate on a filiform few-flowered peduncle shorter than the petiole, glabrous; the pedicels erect, ·2–·3 in. long; the calyx broadly campanulate, pubescent, its teeth subulate. *Petals* villose, yellow; anthers glabrous, inappendiculate. *Female flower* solitary on a peduncle ·5 in. long. *Fruit* narrowly cylindric, beaked, tapering to the base, velvety, ·75 in. long, its peduncle filiform; *seeds* 6–8, foveolate. *Bryonia marginata*, Blume Bijdr. 924; Ser. in DC. Prodr. III, 305; Roem. Syn., fasc. II, p. 36; Miq. Flor. Ind. Bat. I, Pt. II, 660. *B. epigæa*, Blume Bijdr. 924; Ser. in DC. Prodr. III, 306. *Aechmandra Blumeana*, Roem. Syn. fasc. II, p. 33; Miq. Flor. Ind. Bat. I, Pt. II, 657. *Melothria Rumphiana*, Scheff. Ann. Jard. Bot. Buitenz. I, 25. *Cerasiocarpum? Maingayi*, Clarke in Hook. fil. Flor. Br. Ind. III, 629.

Malacca; *Maingay* (Kew Distrib.) 1268. Perak; *King's Collector* 874. Distrib. Java and Sumatra.

Var. *heterophylla*, Cogn. in DC. Mon. Phan. III, 594. *Leaves* quite entire, ovate-cordate or oblong-sub-hastate, scabrous above, almost smooth beneath but hairy on the nerves. *Bryonia heterophylla*, Blume Bijdr. 925; Wall. Cat. 6704; Roem. Syn., fasc. II, 35. *B. Blumei*, Ser. in DC. Prodr. III, 305; Miq. Flor. Ind. Bat. I, Pt. I, 659. *Cerasiocarpum? penangense*, Clarke in Hook. fil. Flor. Br. Ind. III, 629.

Penang; *Wallich; Curtis* 1928. Distrib. Java.

NOTE.

There are in the Calcutta Herbarium specimens of several species of *Melothria*

which Mr. C. B. Clarke, (who elaborated the family of *Cucurbitaceæ* for Hooker's Flora of British India, and who kindly compared my Malayan material in the Kew Herbarium) considers as probably new. But, as these want either flowers or fruit, I am obliged to leave them undescribed. The chief amongst these are Perak, Wray 2228 and 3416; and Andamans, King's Collector 2200.

8. Gynostemma, Blume.

Climbing herbs, tendrils simple. *Leaves* pedate; leaflets 3–5, ovate-lanceolate, serrate, membranous. *Flowers* small, dicœcious, in axillary diffuse panicles, greenish. *Male flower;* calyx short, with 5 small lobes; corolla rotate, 5-partite, with lanceolate segments; stamens 5, filaments connate below; anthers 2-celled, the cells straight and elongate. *Female flower*, calyx and corolla as in the male; ovary rotund, 2–3-celled; styles 2 or 3, united below, bifid at the apex; ovules 2 in each cell, pendulous. *Fruit* globose, umbonate, indehiscent, as large as a pea, 1–3-seeded. *Seeds* wingless, verrucose, sub-muricate. Species 4; all Indo-Malayan.

Gynostemma pedata, Blume Bijdr. 23. Slender, 10–20 feet long; young branches and leaves puberulous or glabrous, rarely pubescent. *Leaves* membranous, trifoliolate or pedate, the petioles 1–1·5 in. long; leaflets 3–7, ovate-oblong, lanceolate or oblanceolate, unequal, the middle the longest, their apices acute or sub-acute, the bases narrowed and sometimes oblique, the edges crenulate or crenate-dentate; length ·75–2·5 in., breadth ·4–1 in., the petiolules ·1–·2 in. *Panicles* longer than the leaves, 3–6 in. or even a foot long, slender, sparsely branched, more or less coarsely pubescent. *Calyx-segments* triangular, acute; segments of *corolla* 1-nerved, ciliate-dentate. *Fruit* ·15 in. in diam. *Seeds* trigonous. Roem. Syn., fasc. II, p. 110; Miq. Flor. Ind. Bat. I, Pt. I, 683; Clarke in Hook. fil. Flor. Br. Ind. II, 633; Cogn. in DC. Mon. Phan. III, 913. *G. laxa*, Cogn. Mon. Phan. III, 914; *Zanonia laxa*, Wall. Cat. 3727; Pl. As. Rar. II, 29; Arn. in Hook. Journ. Bot. III, 272 (*in note*). *Zanonia cissoides*, Wall. Cat. 3726; Pl. As. Rar. II, 28. *L. Wightiana*, Arn. Pugill. 38; Nov. Act. Acad. Nat. Cur. 18, Pt. I, 356; Roem. Syn., fasc. II, 117. *Alsomitra laxa*, Roem. Syn., fasc. II, 118. *Pestolozzia laxa*, Thw. Enum. Pl. Zeyl. 124. *P. pedata*, Zoll. et Moritz. Syst. Verz. p. 31. *Alsomitra cissoides*, Roem. Syn., fasc. II, 118. *Enkylia trigyna*, Griff. Pl. Cantor. 27; Miq. Prol. Flor. Jap., pp. 15 and 142. *E. digyna*, Griff. Pl. Cantor. 27. *Zanonia pedata*, Miq. Flor. Ind. Bat. I, Pt. I, 683. *Gynostemma cissoides*, Franch. et Sav. Enum. Pl. Jap. I, 176. *Vitis atroviridis*, Wall. Cat. 6040; *Vitis trichophora*, Wall. Cat. 9032.

Perak; *King's Collector* 2306. Distrib. Malayan Archipelago, British India and Tonkin.

This plant varies as to the number of its leaflets in its leaves and as to pubescence. The pedate forms with 5–7-puberulous leaflets have been by some authors (among whom is M. Cogniaux, the latest monographer of the *Cucurbitaceæ*) considered as belonging to a different species from the plants with trifoliolate glabrous shining leaves; and the latter has been named *G. laxa*. After carefully examining about a hundred specimens collected in different parts of British India and Malaya, I find so many that unite to some extent the characters relied upon as distinctive that I have been driven, with all respect to M. Cogniaux, to adopt Mr. Clarke's view that there is but a single species.

9. Zanonia, Linn.

Climbing herbs; tendrils simple. *Leaves* long-petioled, simple, ovate or oblong. *Flowers* small, diœcious, in large compound pendulous racemes, males pedicelled, females subsessile. *Male*; sepals 3, oblong or orbicular, concave; corolla rotate, 5-partite, the segments subacute; stamens 5, free, inserted on a fleshy disc, filaments very short; anthers 1-celled, transversely oblong. *Female*; calyx and corolla as in the male; ovary sub-clavate, at first 3-celled; styles 3, spreading, 2-fid at the apex; ovules in each cell 2 or many, pendulous, attached in 2 series to a fleshy parietal placenta. *Capsule* large, elongate-cylindric, clavate, 3-valved at the truncate apex. *Seeds* large, oblong, pendulous, compressed, surrounded by a large membranous wing. Distrib. Species 3; British India, Malaya.

Leaves ovate-oblong; fruit 2·5 in. long	...	...	1. *Z. indica.*
Leaves ovate-rotund; fruit 5–8 in. long	...	...	2. *Z. Clarkei.*

1. Zanonia indica, Linn. Spec. Pl. ed. II, 1457. Slender, climbing to the extent of 30–50 feet, glabrous. *Leaves* coriaceous, ovate-oblong, acute; the base 3-nerved, rounded or somewhat emarginate; main nerves 6–8 pairs, curved, spreading, prominent beneath; length 3·5–6 in., breadth 2–3·5 in., petiole ·65–·8 in. *Fruit* cylindric-campanulate, glabrous, the apex truncate, 2·5 in. long; *seeds* flat, thin, 1·5–1·75 in. long; the nucleus oval, only ·6 in. long, the rest being wing. Blume Bijdr. 937; Ser. in DC. Prodr. III, 298; Roem. Syn. fasc. II, 117; Wight and Arn. Prodr. 340; Wight Ill. t. 103; Miq. Flor. Ind. Bat. I, Pt. I, 682; Thwaites' Enum. Pl. Zey. 124, 442; Clarke in Hook. fil. Flor. Br. Ind. II, 633; Trimen Flora Ceylon II, 261.

Perak; *King's Collector* 7198, 7362.

2. Zanonia Clarkei, n. spec. King. Slender, 60–80 feet long, glabrous, the young branches deeply grooved. *Leaves* coriaceous, ovate-rotund, acute; the base broad, emarginate or slightly cordate, with 5–7 nerves radiating from the apex of the petiole (the lateral one on each side small); length 2·5–3·5 in., breadth 2·5–3 in., petiole ·75 in., tendrils bifid. *Flowers* unknown. *Fruit* ovoid-cylindric, smooth, 5–8 in. long,

and 3 in. in diam. *Seeds* flattened, about ·1 in. thick, ovate, with 6 unequal deep narrow marginal lobes (those at the ends being the longest), the seed proper or nucleus papillose, 1 in. long and ·75 in. broad, surrounded on all sides by a thin membranous wing nearly 1 in. wide.

Perak; *King's Collector* 7230.

This fine species is known only from a single gathering of six specimens, none of which bears a flower. My friend Mr. C. B. Clarke, F.R.S., who was so kind as to compare for me at Kew the whole of my Malayan Cucurbits, notes on this as follows: "This is either a new *Zanonia* near *Z. indica*, Linn., or a new *Alsomitra* near *A. Capricornica*, F. Müll.—I think a *Zanonia*, whether the sepals turn out to be 5 or not. The 2-fid cirrhi may do for either genus. The spinose-margined seeds are not like those of *Zanonia*; but the ovoid, or sub-globose fruit is like nothing out of section *Macrozanonia*, Cogn. I call it *Zanonia*, n. spec."

10. Alsomitra, Bth. & Hk. f.

Large climbers; tendrils simple or 2-fid. *Leaves* with 3 oblong entire leaflets. *Flowers* small, diœcious, white, in compound panicles with filiform branches. *Male;* calyx rotate, 5-partite, segments oblong, acute; corolla rotate, 5-partite, segments obtuse; stamens 5, filaments short, near together at the base; anthers small, oblong, straight, 1-celled. *Female;* calyx and corolla as in the male; ovary elongate-clavate, 1-celled; styles 3–4, conical, with semi-lunate stigmas; ovules very many, pendulous; placentas 3, thick, vertical, parietal. *Capsule* large, elongate-clavate, truncate and 3-valved at the apex. *Seeds* very many, compressed, vertical, in six rows, much corrugated, incised or horned on the margin with a terminal membranous wing longer than the seed. Distrib. Species 9; British India, Malaya, North Australia, S. America.

Alsomitra clavigera, Roem. Syn. fasc. II, p. 118. A slender glabrous climber. *Leaflets* fleshy, the middle the largest, oblong or oblong-lanceolate, the apex obtuse, the base narrowed, the edges entire, subsessile, eglandular, length 1·5–3 in., breadth ·65–1 in. *Panicles* slender, twice as long as the leaves, longer in fruit. *Capsule* smooth, 1·25–1·5 in. long and ·4 in. broad. *Seeds* dark, cinereous, shortly muricate. Cogniaux in DC. Mon. Phan. III, 927; Hook. fil. in Bot. Mag. t. 6017; Clarke in Hook. fil. Flor. Br. Ind. II, 634. *Zanonia sarcophylla*, Wall. Cat. 3724; Pl. As. Rar. II, 28, t. 133.

Kedah; *Curtis* 2504.

Ordered LVI. ARALIACEÆ.

Trees or shrubs, very rarely herbs, often scandent, sometimes prickly. *Leaves* alternate, the uppermost rarely sub-opposite, long-

petioled, large, simple or compound; stipules adnate to the petiole, sometimes inconspicuous or 0. *Flowers* regular, small, often polygamous, in umbels racemes or umbellate panicles; bracts and bracteoles small or conspicuous; pedicels continuous with the base of the calyx or jointed. *Calyx-tube* adnate to the ovary; limb truncate, obsolete or with small teeth. *Petals* 5, rarely 6–7 or many, valvate or sub-imbricate, expanding or calyptrate. *Stamens* as many as and alternate with the petals (very many in *Tupidanthus*), inserted round an epigynous disc. *Ovary* inferior, 2-celled, or cells as many as the stamens, or 1-celled; styles as many as the cells, distinct or united; ovules solitary and pendulous in each cell. *Fruit* coriaceous or drupaceous, usually small, one or more cells sometimes suppressed. *Seed* pendulous, albumen uniform or ruminate; embryo minute, radicle next the hilum. DISTRIB. Species 400, chiefly tropical and subtropical, a few in the cool temperate zones.

Petals imbricate (slightly); pedicels of flowers jointed :—	
Styles 2–5, free; leaves compound	1. ARALIA.
Styles 3 or 4, free; leaves simple, entire, lobed or pinnatifid; ovary 1-celled	2. ARALIDIUM.
Petals valvate; stamens not exceeding 12 :—	
Albumen uniform, ovary 4–12-celled, pedicels continuous with the flower, leaves simple or digitately compound :—	
Fruit boldly ridged, never more than ·3 in. long; leaves usually compound	3. HEPTAPLEURUM.
Fruit succulent, ovoid-rotund, ·5 in. in diam.; leaves simple, large, rotund-reniform, lobed ...	4. TREVESIA.
Fruit succulent, ·3 in. in diam., obscurely ridged; leaves simple, entire (palmately lobed in young shoots)	5. DENDROPANAX.
Albumen ruminate :—	
Ovary 1-celled :—	
Ovary 1-ovulate, leaves compound	6. ARTHROPHYLLUM.
Ovary with 2 ovules; fruit 2-celled, 2-seeded, leaves simple	7. WARDENIA.
Ovary 2-celled, pedicels continuous :—	
Style distinct; leaves pinnately decompound ...	8. HETEROPANAX.
Styles combined; leaves digitate, palmate or angled	9. BRASSAIOPSIS.
Ovary 4- or 5-celled, pedicels jointed	10. HETEROPSIS.
Petals valvate; stamens 30–50	11. TUPIDANTHUS.

1. ARALIA, Linn.

Herbs, shrubs or small trees, glabrous, hairy or prickly. *Leaves* alternate or whorled, digitate, pinnate or compound-pinnate; leaflets

serrate or nearly entire; bracts and stipules not prominent. *Umbels* solitary or in racemes or panicles, rarely in compound umbels; pedicels usually jointed close under the flower. *Flowers* often polygamo-monœcious. *Calyx* with its margin truncate or 5-toothed. *Petals* 5, ovate, imbricate in bud. *Stamens* 5. *Ovary* 2–5-celled; styles 2–5, free or shortly connate at base. *Fruit* 4–5-celled, 4–5-angular, or subglobose, 2–3-celled. *Albumen* uniform. DISTRIB. Species about 50; extending from India and Malaya to Japan and North America.

Leaflets entire or minutely serrulate, densely ferrugineous-tomentose on the lower surface	1. *A. Thomsoni.*
Leaflets coarsely and somewhat unequally serrate, the lower surface with scattered flexuose white hairs	2. *A. armata.*
Leaflets obscurely undulate-serrate, quite glabrous on both surfaces, the lower sub-glaucous	3. *A. ferox.*

1. ARALIA THOMSONI, Seem. Rev. Hed. 91. A large prickly shrub, all parts more or less softly pubescent or tomentose. *Stem* slender, the prickles remote. *Leaves* large, 2–3-pinnate; leaflets thickly membranous, 5–9 in each ultimate pinnule, ovate-lanceolate, acuminate, the base rounded and somewhat oblique; the petiolules of all except the terminal very short (usually less than ·1 in. long), that of the terminal leaflet ·5 in. or upwards, the edges entire or minutely serrulate; upper surface sparsely strigose, the nerves and midrib pubescent; the lower softly tomentose; length 2·5–3·5 in., breadth 1–1·75 in. *Panicles* 15–20 in. long, with short sub-horizontal branches; the ultimate branches umbellate; the bracts narrowly lanceolate, ·25 in long. *Fruit* ·15 in. long, somewhat wrinkled, glabrous, the ridges broad. Clarke in Hook. fil. Flor. Br. Ind. II, 723.

PAHANG; *Ridley* 2450. PENANG; *King's Collector* 1574; *Curtis* 462. PERAK; *King's Collector* 7807, 8704, 10045.

2. ARALIA ARMATA, Seem. Rev. Hed. 91. A prickly shrub; stem slender, almost glabrous except the puberulous young parts. *Leaves* very large, 3-pinnate, the rachises puberulous; leaflets thinly membranous, 9–11 in each ultimate pinnule, ovate-lanceolate, acuminate, the edges coarsely and somewhat unequally serrate; the base rounded, slightly oblique or sub-cordate; sessile except the terminal one; petiolule of the terminal leaflet under 1 inch; length of leaflets 3–5 in., breadth 1·5–2 in.; upper surface with a few sparse adpressed hairs, otherwise glabrous; lower with scattered white flexuose hairs especially on the nerves and midrib. *Panicle* 15–18 in. long, pubescent in its ultimate 3-fid branches, the lower part glabrous, ultimate branchlets umbellate; the pedicels slender ·3–·4 in. long, tomentose. *Fruit* nearly ·2 in. long, glabrous; the ridges broad, flat. Kurz For. Flora Burma, I, 536;

Clarke in Hook. fil. Flor. Br. Ind. II, 723. *Panax armatum*, Wall. Cat. 4933; G. Don. Gen. Syst. III, 386.

KEDAH; *Curtis* 2526. DISTRIB. British India; in Burma, the Khasia Hills and on the lower slopes of the Eastern Himalaya.

3. ARALIA FEROX, Miq. Flor. Ind. Bat. I, Pt. I, 750. A lax spreading glabrous shrub, often scandent to 20 or 30 feet; the stems, branches, rachises of the leaves and inflorescence bearing numerous short recurved spines. *Leaves* 2–3-pinnate, the pinnæ 3 or 4 pairs; leaflets subcoriaceous, 3–5 in a pinna, the pairs opposite, ovate, acute, the bases rounded, the edges obscurely undulate-serrate; both surfaces glabrous, the upper shining when dry, the lower sub-glaucous; length 1–2 in., breadth ·75–1 in.; petiolules unequal, the lateral ·15–·3 in., the terminal ·5–·65 in. long. *Panicle* terminal, 8–15 in. long and 6 in. across, with numerous slightly compressed horizontal branches, themselves branching and ultimately ending in numerous pedunculed umbels of 10–15 long-pedicelled oblong flowers ·1 in. long; the pedicels slender, ·3–5 in. long. *Calyx-tube* campanulate, 10-ridged, the limb with 5 small triangular acute teeth. *Petals* ovate. *Fruit* ovate-globose, boldly 5-ridged, rather more than ·1 in. long.

PERAK; *Scortechini* 142, 501; *King's Collector* 1037, 4434, 5089, 8438, 10568; *Wray* 2155.

2. ARALIDIUM, Miq.

Leaves large, simple, usually deeply lobed or pinnatifid, glabrous. *Flowers* male or hermaphrodite, in large compound panicles, minute. *Calyx-teeth* triangular, spreading, the tube campanulate. *Petals* 5, imbricate. *Stamens* 5. *Ovary* usually 3-celled, two of the cells soon aborting. *Styles* distinct, subulate. *Fruit* obliquely ovoid, drupaceous, 1 inch or more in length, 1-seeded; the seed solitary, rugose, pendulous, vertically sulcate; albumen very copious, coarsely ruminate, penetrated by outgrowing folds from the funicle; embryo small. DISTRIB; two species, both Malayan.

This is a remarkable genus of doubtful position. The large solitary seed, with a much developed funicle forming an expansion at the base of the coarsely ruminated albumen and sending processes into the latter, and the unisexual habit make it doubtful whether it should not be placed in *Cornaceæ* (to which Seemann referred it), rather than in *Araliaceæ*.

ARALIDIUM PINNATIFIDUM, Miq. Flor. Ind. Bat. I, 763, t. 13. A small tree without prickles, glabrous except the inflorescence. *Leaves* thinly coriaceous, irregularly lobed or coarsely pinnatifid, rarely entire and narrowly elliptic; length of the lobed or pinnatifid forms 10–18 in., breadth 7–10 in.; length of the entire leaves 4–10 in., breadth 2–4 in.; petiole stout, 1·5–5 in. long. *Panicles* many-branched, ferruginous-

puberulous, shorter than or as long as the leaves. *Petals* pubescent. *Fruit* narrowly ellipsoid, pointed at each end, glabrous, the pericarp thin, length 1·35 in., diam ·6 in., damson-colored when ripe. Miq. Flor. Ind. Bat. Suppl. 340; Clarke in Hook. fil. Flor. Br. Ind. II, 726; Hemsley in Hook. Ic. Plantar. t. 1549.

PAHANG; *Ridley* 2439. SELANGOR; *Curtis* 2340. SINGAPORE; *Ridley*; *Hullett*, 485, 888; *King*. PAHANG; *Ridley* 2662. MALACCA; *Griffith* (Kew Distrib.) 2702; *Maingay* 676. PERAK; *Scortechini*; *Wray*; *King's Collector* (many numbers), a very common plant. DISTRIB. Sumatra, *Forbes* 2207.

The structure of the seed is well explained by Mr. Hemsley in his description and figure in *Hooker's Icones Plantarum*.

3. HEPTAPLIURUM, Gærtn.

Large shrubs or trees, glabrous or tomentose, without prickles. *Leaves* digitate, rarely compound-digitate or 1-foliolate; leaflets coriaceous, entire or remotely toothed or lobed, never closely serrate nor ciliate, those near the panicle usually entire; stipules often connate within the petiole and prominent. *Umbels* (rarely capitate) panicled or in compound racemes; bracts woolly, deciduous or persistent; pedicels not jointed under the flower; bracteoles few or 0, or rarely densely tufted. *Calyx-margin* toothed or truncate. *Petals* 5–6 or many, valvate. *Stamens* as many as the petals. *Ovary* cells as many as the petals, disc small or large; styles small, separate or combined in a short conical narrow cylindric column. *Fruit* subglobose, 5–6-angled. *Seeds* compressed, albumen uniform. DISTRIB. Species 55, in the tropics of the Old World.

Leaves simple	1. *H. avene.*
Leaves all trifoliolate :—	
Panicle longer than the leaves, slender; its branches long, spreading, laxly-flowered	2. *H. luridum.*
Panicle shorter than the leaves; its branches short, densely-flowered	3. *H. triste.*
Leaves all digitately 5–9-foliolate :—	
Panicle simple or 2-branched, sub-racemose, only about 3 in. long; the lateral umbels subsessile, lax, few-flowered	4. *H. sub-racemosum.*
Panicle divided from the base or near it into several erect narrow branches 6–12 inches long; the lateral branches very short and bearing dense heads of subsessile flowers :—	
Ovary 8-celled, leaves glaucous and with loose wooly hairs beneath	5. *H. Cephalotes.*
Ovary 5-celled :—	
Both surfaces of the leaves quite glabrous ...	6. *H. Scortechinii.*
Lower surface of leaves tomentose	7. *H. tomentosum.*

Panicle with few narrow erect branches bearing shortly peduncled umbels of pedicellate flowers:—		
Ovary 12-celled; leaflets 5, membranous, 7–12 in. long	8.	*H. Singalangense.*
Ovary 9-celled; leaflets 7–9, very coriaceous, 3–5 in. long	9.	*H. lati-foliolatum.*
Ovary 5-celled:—		
Main nerves of leaflets only 2 or 3 pairs, the basal prominent; reticulations rather wide, not prominent; panicles very narrow, covered, up to the bases of the pedicels, with minute stellate hair ...	10.	*H. subulatum.*
Main nerves of leaflets 5 or 6 pairs, basal nerves prominent; panicles glabrous (rarely hairy) narrow in flower, spreading in fruit	11.	*H. venulosum.*
Panicle with spreading branches:—		
Branches of the panicle umbellate:—		
Ovary 5-celled; reticulations of leaves wide, distinct	12.	*H. ellipticum.*
Ovary 6-celled:—		
Common petiole 1–2·5 in. long; leaflets lanceolate or oblanceolate, caudate-acuminate, much narrowed to the base, 1·5–3·5 in. long; flower-buds globular, ·1 in. in diam.; fruit ·1 in. long ...	13.	*H. scandens.*
Common petiole 2–4 in. long; leaflets ovate-lanceolate, shortly caudate-acuminate, the bases rounded, 2–4 in. long; flower-buds oblong, about ·2 in. long; fruit ·25 in. long	14.	*H. affine.*
Common petiole 10–24 in. long; leaflets oblong-elliptic, shortly and abruptly acuminate, 4–12 in. long; flower-buds sub-globular, ·1 in. in diam.; fruit elliptic, ·25–·3 in. long	15.	*H. Hullettii.*
Common petiole 5–10 in. long; leaflets oblong-elliptic or oblanceolate-oblong, acute, 5–10 in. long; flower-buds globular, ·15 in. in diam.; fruit ovoid, ·25 in. long	16.	*H. Ridleyi.*
Common petiole 2–2·25 in. long; leaflets lanceolate, acute, narrowed to the base, 1·5–2·5 in. long; flower-buds oblong, ·2 in. long, fruit ·3 in. long ..	17.	*H. nervosum.*
Branches of the panicle racemose	18.	*H. Wrayi.*
Lower leaves large, digitately decompound:—		
Leaflets entire, narrowly oblong, acuminate, 2–3·5 in. long, panicle 8 in. long	19.	*H. biternatum.*
Leaflets usually entire, 2·5–7 in. long, panicle 10–15 in. long; fruit oblong	20.	*H. heterophyllum.*
Leaves bipinnate, leaflets coarsely toothed; fruits sub-globular	21.	*H. Curtisii.*

1. HEPTAPLEURUM AVENE, Seem. Rev. Hed. 43. Scandent; young branches with striate rugulose glabrous bark, brown when dry. *Leaves*

simple, coriaceous, narrowly oblong, acute, narrowed to the base, the edges slightly recurved; both surfaces glabrous, dull when dry; main nerves about 12 pairs, faint, sub-horizontal; length 3·5–5·25 in., breadth ·9–1·2 in.; petiole ·75–1·25, thickened near the apex. *Panicles* single or 2 or 3, terminal, puberulous, half as long as the leaves, erect; the few branches rather close together, about ·25 or ·3 in. long, each bearing 3–5 pedicellate flowers; the buds ·15 in., ovoid, their pedicels ·2 in. long; bracts lanceolate, deciduous. *Calyx-rim* narrow; petals, stamens and stigmas 6. *Fruit* ellipsoid, as large as a pea, sulcate. *Sciadophyllum avene*, Herb. Korthals.

Singapore; *Ridley* 5840, 6337. Distrib. Sumatra.

At once distinguished in the genus by its oblong simple leaves.

2. Heptapleurum luridum, new species. An epiphytic shrub 2–3 feet long; branches with rugulose glabrous bark. *Leaves* trifoliolate, with a common petiole 1–1·75 in. long, glabrous, fleshy when fresh, vertically rugose when dry; leaflets very coriaceous, narrowly elliptic-oblong, slightly oblique, tapering gradually to each end; the edges entire, much recurved when dry; both surfaces quite glabrous, the nerves and veins very indistinct even when dry; length 2·5–4 in., breadth ·5–·75 in.; petiolules unequal, thick, the lateral ·15–·25 in. long, the terminal about ·4 in. *Panicle* terminal, longer than the leaves; its branches few, slender, long, spreading, glabrous; the ultimate branchlets 1–1·5 in. long, bearing umbels of 3–8 broadly ovoid glabrous flowers ·1 in. long; their pedicels at first only about ·1 in. long, but two or three times as long in fruit. *Calyx-tube* shortly campanulate; its mouth truncate, entire. *Petals* completely united into a calyptra. *Stamens* 6, erect, the filaments short. *Styles* united into a short conical column; the stigmas 6, small, occupying the corners of its truncate apex.

Perak; *Scortechini* 1191; *King's Collector* 8304.

A very distinct small species easily recognised by its narrow very acuminate avenous leaflets borne on fleshy petioles, and by its slender spreading long-branched few-flowered panicles.

3. Heptapleurum triste, new species. A tree; young branches as thick as a swan's-quill, glabrous, pale when dry. *Leaves* 3-foliolate, the common petiole 1·5–2 in. long; leaflets thickly coriaceous, glabrous, broadly elliptic, blunt or shortly apiculate, the base rounded; the edges entire, boldly recurved when dry; main nerves 10 to 12 pairs, close together, indistinct on both surfaces; length 2·25–3·25 in., breadth 1·5–2 in.; petiolules unequal, the lateral pair ·5 in. long, the middle one ·8 in. *Panicle* terminal, shorter than the leaves, glabrous, divided from the base into 2 or 3 spreading branches, ebracteate; the branchlets about ·5 in. long (longer in fruit), each ending in an umbel of 10–20 ovate

flowers, ·15 in. long, their pedicels ·1 in. long. *Calyx-tube* campanulate; the limb truncate, narrow. *Petals* 5, broadly elliptic, blunt, reflexed. *Fruit* narrowly oblong, pointed, deeply 5-ridged, glabrous, crowned by the short conical style-column, ·2 in. long, glabrous.

Perak; on Ulu Batang Padong, at an elevation of about 4900 feet; *Wray* 1509.

A species near *H. ellipticum* but readily distinguished from that in the Herbarium by its dull broad coriaceous leaflets, more widely campanulate calyx-tube, and larger fruit.

4. Heptapleurum sub-racemosum, new species. A shrub 2–3 feet high; young branches with thick corky glabrous bark, pale when dry. *Leaves* trifoliolate or sometimes 5-foliolate, the common petiole 1·5–2·5 in. long, glabrous. *Leaflets* coriaceous, narrowly elliptic-lanceolate, caudate-acuminate, narrowed at the base, the edges entire and slightly revolute; both surfaces glabrous, distinctly and finely reticulate when dry; length 2·25–4 in., breadth ·75–1·1 in.; petiolules unequal, ·3–·4 in. long, that of the terminal leaflet ·8–1·25 in. long, thickened at the apex. *Panicle* solitary, terminal, very narrow, sub-racemose, 2-branched, only about 3 inches long and about ·65 in. across; the branchlets only ·1–·2 in. long, each ending in an umbel of 3–5 oblong, green flowers ·15 in. long; rim of *calyx* very narrow. *Fruit* oblong, ·2 in. long, glabrous, with 5 blunt ridges, pale green tipped with bluish, 5-celled.

Perak; *King's Collector* 8283.

Readily recognised by its small caudate-acuminate narrow leaflets, much and prominently reticulated when dry; and by its short narrow racemoid panicles.

5. Heptapleurum Cephatotes, Clarke in Flor. Br. Ind. II, 731. A large tree. *Leaves* digitate, their petioles rather slender, 1·5–3·5 in. long, glaucous; leaflets about 7, oblong-elliptic, the apex abruptly and shortly acuminate, the base rounded, the edges entire and slightly recurved when dry; upper surface shining, glabrous; the lower dull, glaucous, and bearing when young some quickly deciduous loose wooly hairs. *Panicle* minutely tomentose, terminal, consisting of numerous sub-erect branches 6–12 inches long, bearing shortly peduncled globose ebracteolate dense capitula. *Fruit* oblong, ribbed, 8-celled, covered with stellate white tomentum and crowned by the broad cluster of short styles; disc large, spongy. *H. capitatum*, Seem. Rev. Hed. 15 (in part).

Malacca; *Griffith* (Kew Distrib.) 2700. Singapore; *Ridley* 3973, 6409. Penang; *Curtis* 837. Perak; *Wray* 1542; *Scortechini* 391.

6. Heptapleurum Scortechinii, new species. An epiphytic shrub, the young branches stout. *Leaves* digitate; the common petiole terete, glabrous, stout, 2·5–3·5 feet long; leaflets 8–10, very coriaceous, oblong

or oblong-elliptic, the apex blunt or shortly apiculate, the base rounded, the edges entire and recurved when dry; both surfaces quite glabrous, not reticulate; main nerves 6–9 pairs, slightly prominent on the lower surface; length 9–13 in., breadth 4–6 in.; petiolules unequal, 2·5–5 in. long. *Panicle* terminal, dividing into several narrow raceme-like branches, 10–20 inches long, covered with pale scurfy tomentum; the branchlets 40 or 50 in number and ·35 to ·75 in. long, each with a broadly ovate convolute wooly bract at its base, and at its apex a dense globular umbel of sub-globular flowers ·1 in. in diam. and borne on pedicels ·05 in. long. *Calyx* truncate, tapering to the base. *Petals* 6 or 7, narrowly lanceolate. *Stigmas* free, ovary 5-celled. *Fruit* unknown.

Perak; *Scortechini* 2008.

Collected only by the late Father Scortechini, whose specimens unfortunately are scanty and rather fragmentary. A very distinct species, in general appearance resembling *H. Cephototes*, Clarke and *H. rigidum*, Seem. The leaflets of the latter have however twice as many main lateral nerves, although their length is not greater.

7. Heptapleurum tomentosum, Hassk. in Cat. Hort. Bot. Bogor. (1844), p. 165. A half-scandent shrub, 6–8 in. high; the young branches stout, deciduously stellate-pubescent, the older glabrous. *Leaves* digitate; the common petiole 9–12 in. long, densely covered with rusty stellate tomentum, the intra-petiolar stipules about ·75 in. long. *Leaflets* 5–7, coriaceous, oblong-elliptic, caudate-acuminate, slightly narrowed to the base, the edges entire and slightly revolute; the upper surface boldly bullate and finely reticulate, quite glabrous, pale olivaceous when dry; the lower pale brown, more or less closely covered with pale brown stellate hairs; length 8–10 in., breadth 2·75–3·5 in.; petiolules unequal, 1·5–2·5 in. long, tomentose. *Panicles* usually two together, terminal, 4–5 in. long, racemose; the lateral branches about 12, short, ·2–4 in. long, each bearing a sub-globular umbel of 8–10, ovoid, blunt, glabrous flowers ·15 in. long; their pedicels ·1 in. long, pubescent. *Calyx-tube* funnel-shaped, the rim narrow. *Petals* 5, white, glabrous, calyptrate. *Stamens* longer than the petals. *Styles* 5, conjoined, papilliform, their apices free. *Fruit* ·2 in long, narrowly oblong, 5-ridged, 5-celled. *Sciadophyllum tomentosum*, Blume Bijdr. 877; DC. Prod. IV, 260. *Paratropia tomentosa*, Miq. in Bonplandia for 1856, p. 138; Flor. Ind. Bat. I, Pt. I, 753; Ann. Mus. Lugd. Bat. I, 23.

Perak; *Scortechini*, *Wray* 2202, 3152; *King's Collector* 2066, 2216, 2569, 7253, 8733. Selangor; *Curtis* 2341. Distrib. Sumatra; *Forbes.* 2611.

I have seen no authentically-named specimen of this from the Leiden Herbarium, but the Perak plant agrees so completely with Miquel's description that I have no doubt of the correctness of my identification.

8. Heptapleurum Singalangense, Seem. Rev. Hed. 42. Scandent, glabrous. *Leaves* digitate; common petiole 12–15 in. long, stout; leaflets 5, membranous, elliptic, shortly acuminate, the base slightly narrowed, the edges with a few irregular remote teeth or entire; both surfaces glabrous, faintly reticulate; main nerves 7 or 8 pairs, curved, spreading; length 7–12 in., breadth 3·25–5·25 in., petiolules 1·25–2·5 in., thickened at the base. *Panicle* 12–18 in. long, covered with deciduous rusty stellate pubescence, very narrow, (about 2 in. wide); the branches numerous, about ·5 in. long, each ending in an umbel of 5–10 oblong obovoid pedicelled flowers ·25 in. long, their pedicels ·2–·3 in. long. *Calyx-tube* shortly campanulate, minutely scaly; its limb narrow, truncate, undulate. *Petals* 9, fleshy, narrow, slightly unequal, connate by their edges. *Stamens* 9. *Stigmas* united into a notched fleshy ring, ovary 12-celled. *Fruit* unknown. *Paratropia Singalense*, Miq. in Ann. Mus. Lugd. Bat. I, 23. *Agalma redivivum*, Seem. Rev. Hed. 25.

Perak; *Scortechini* 390; *Curtis* 3170.

The specimens which I have seen are few. In foliage they agree with the specimen in Kew named *Agalma redivivum*, which however Seemann describes as having 7–8-merous flowers. In other respects they agree with Seemann's description of that plant. They also agree with Miquel's full description of his *Paratropia Singalangense*, except as to the length of the petiole which Miquel gives as only 4–6 inches, a measurement so much out of proportion with those he gives for the petiolules, (1–2·5 in.) and leaflets, that I cannot help suspecting some clerical error.

9. Heptapleurum latifoliolatum, new species. A bush with stout branches. *Leaves* digitate; the common petiole stout, glabrous, somewhat compressed, 7–11 in. long; leaflets thickly coriaceous, ovate-rotund, shortly acuminate or blunt, the base rounded; the edges entire, slightly recurved when dry; both surfaces glabrous, the upper shining, the lower dull and sub-glaucous; main lateral nerves 7 or 8 pairs, spreading, curving upwards, prominent on the lower surface, depressed on the upper when dry; length 3–5 in., breadth 1·75–3·5 in.; petiolules ·8–1·5 in., rather stout. *Panicles* terminal, in pairs, 5–8 in. long, glabrous; the branches short, horizontal, each bearing at its apex an umbel of 10–15 pedicelled flowers; pedicels ·3 in. long. *Fruit* broadly ovoid, deeply 9-ridged, 9-celled, glabrous, crowned by the 9 very short free styles, and ·15 in. in diam., red when ripe.

Perak; on Gunong Babu at an elevation of about 5000 feet; *Wray* 3927.

10. Heptapleurum subulatum, Seem. Rev. Hed. 42. Scandent, glabrous. *Leaves* digitate; the common petiole 2–6 in. long, slender, glabrous, terete; leaflets coriaceous, oblong-elliptic or elliptic, shortly acuminate, tapering to the base; the edges entire, revolute when dry; both surfaces glabrous and reticulate but not prominently so, the upper

shining, the lower dull when dry; midrib prominent on the lower surface as also the 4 oblique, basal, and 2–3 pairs of sub-horizontal main nerves; length 2·5–7 in., breadth 1–3·5 in; petiolules unequal, ·2–2 in., swollen near the apex. *Panicle* terminal, stellately puberulous, shorter than the leaves while in flower, longer in fruit, bearing many very narrow racemoid branches each with an acuminate lanceolate bract 1 in. long at its base; branchlets very short, from ·15 in. when in flower to ·5 in. when in fruit, stellately puberulous, each bearing an umbel of 12–20 flowers; buds depressed, globular, glabrous, ·05 in. in diam.; their pedicels ·2 in. long, slender *Fruit* rather broadly ovoid, bluntly 5-ridged, 5-celled, glabrous, ·15 in. long. Clarke in Flor. Br. Ind. II, 730. *Paratropia subulata*, Miq. in Ann. Mus. Lugd. Bat. I, 22.

Malacca; *Griffith* (Kew Distrib.) 2690; Maingay; 681, (Kew Distrib.) *Derry*. Pahang; *Ridley* 1632, 5818. Perak; *Scortechini; Wray* 872, 3090, 3639; *King's Collector* 773, 1102, 2343. Distrib. Sumatra.

This closely resembles *H. venulosum*, Seem., and is not always readily distinguishable from that species. The best marks of this appear to me to be the prominence of the basal nerves and the fewness of the other main nerves (only 2 or 3 pairs); and the longer narrower panicles which, up to the pedicels of the flowers, are covered with minute stellate hairs. The majority of the specimens of *H. venulosum*, Seem. have glabrous panicles, but those of var. *macrophylla* are hairy, and the leaves have many more lateral nerves.

11. Heptapleurum venulosum, Seem. Rev. Hed. 44. Scandent; young branches rather slender, glabrous. *Leaves* digitate; common petiole slender, terete, glabrous, 4–6 in. long; leaflets thinly coriaceous, oblanceolate-elliptic to oblong-lanceolate, shortly acuminate, narrowed to the base, the edges entire; both surfaces shining, glabrous, conspicuously and minutely reticulate; length 3–7 in., breadth 1·25–2·75 in.; petiolules unequal, slender, varying from ·5–1·5 in. long in the same leaf. *Panicle* varying in length but usually shorter than the leaves, terminal, glabrous or occasionally slightly pubescent, (stellate-pubescent in var. *macrophylla*), dividing into several narrow branches bearing short branchlets each terminating in an umbel of 10–15 depressed-globular flowers ·1 in. in diam.; their pedicels unequal, slender, ·15–·3 in. in length. *Fruit* ovoid, bluntly 5-ridged, 5-celled, glabrous, ·15 in. long, yellow when ripe. Clarke in Hook. fil. Flor. Br. Ind. II, 729; Brand. For. Flor. 294; Kurz For. Flor. I, 538. *Paratropia venulosa*, W. & A. Prodr. 377; Wight Ill. t. 118. *Hedera venosa*, Wall. Cat. 4923. *H. terebinthacea*, Wall. Cat. 4920, (partly,). *Aralia digitata*, Roxb. Hort. Beng. 22; Flor. Ind. II, 107.

Andaman Islands; *King's Collectors*. Malacca; *Derry*.

This species, so common from the base of the Eastern Himalaya southwards

through Assam to Burma, is replaced in the Malayan Peninsula by the closely allied species *H. ellipticum*, which differs from this as noted under that species. Mr. Clarke, in Flor. Br. India, however, reduces *H. ellipticum* to *H. venulosum*, a course in favour of which there is a good deal to be said.

12. HEPTAPLEURUM ELLIPTICUM, Seem. Rev. Hed. 43. Scandent; young branches with pale brown glabrous bark. *Leaves* digitate; the common petiole 4–6 in. long, glabrous; leaflets 5–7, coriaceous, more or less broadly elliptic, sometimes elliptic-rotund, apiculate, subapiculate or obtuse, the base rounded or sub-cuneate; the edges entire, revolute when dry; both surfaces glabrous and rather dull when dry; main nerves 4 or 5 pairs, the reticulations wide, inconspicuous; length 2·5–7 in., breadth 1·75–4 in.; petiolules unequal, ·75–1·5 in., that of the middle leaflet 2 in. *Panicle* about as long as the leaves, terminal, glabrous, lax, open, the branches long, spreading and bearing few-flowered umbels on long slender peduncles; flowers globular-ovoid, ·1 in. long or less, on slender pedicels ·15–·2 in. long. *Fruit* oblong, yellowish, with 5 ridges and 5 cells. *Paratropia elliptica*, Miq. in Bonplandia 1856, p. 138; Flor. Ind. Bat. I, Pt. I, p. 756; in Ann. Mus. Lugd. Bat. I, 20; *Sciadophyllum ellipticum*, Blume Bijdr. 878; DC. Prodr. IV, 260.

SINGAPORE; *Ridley* 5839, 6399. MALACCA; *Derry* 1187, 1215. PENANG; *Curtis* 972. PERAK; *Scortechini*; *Wray* 2020, 2136; *King's Collector* 2541, 4733, 10375, 10534. ANDAMAN AND NICOBAR ISLANDS; *King's Collector*.

This resembles *H. venulosum*, Seem, but the reticulations on the leaves of this are wider and less distinct than in that; and the panicles of this have spreading, quite glabrous, lax branches.

13. HEPTAPLEURUM SCANDENS, Seem. Rev. Hed. 43. A slender creeper 3–5 in. long, the stem pale and corky. *Leaves* small, digitate; common petiole 1–2·5 in long, slender; leaflets 3–5, thinly coriaceous, lanceolate, caudate-acuminate, tapering much to the base, the edges entire and somewhat recurved; both surfaces glabrous, the upper smooth and shining, the lower dull and reticulate; length 1·5–3·5 in., breadth ·5–·8 in.; petiolules subequal, ·2–·25 in. long. *Panicles* longer than the leaves, slender, 4–8 in. long; the branches spreading horizontally, simple, each ending in an umbel of flowers on a slender pedicel nearly ·75 in. long; buds globular, ·1 in. in diam. *Fruit* elliptic, boldly 5-ridged, 5-celled, ·1 in. long. *Paratropia scandens*, Miq. in Bonplandia 1856, p. 138; Flor. Ind. Bat. I, Pt. I. 757. *P. brachybotrya*, Miq. Flor. Ind. Bat. I, Pt. I, 755. *Sciadophyllum scandens*, Blume Bijdr. 878.

PERAK; *Wray* 1844, 2401, 2880; *Curtis* 2687; *Scortechini* 218, 1352; *King's Collector* 4304. DISTRIB. Java, Sumatra.

A very slender glabrous species, at once distinguished by its small lanceolate, caudate-acuminate, digitate leaflets.

14. HEPTAPLEURUM AFFINE, new species. A shrub 6–8 feet high, semi-scandent; young branches as thick as a goose-quill, shining, glabrous; common petiole 2–4 in. long, slender, the stipule bout ·65 in., both glabrous; leaflets 5 or 6, thinly coriaceous, ovate-lanceolate to elliptic, acuminate, the base sometimes narrowed but always rounded, the edges entire; length 2·25–4 in., breadth 1·25–1·75 in.; petiolules somewhat unequal, ·75–1·5 in. long. *Panicle* terminal, when young furfuraceously puberulous towards the base, ultimately quite glabrous everywhere, 2·5–5 in. long and almost as broad; the main branches 3 or 4, spreading and bearing, in pairs or whorls of 3, six to twelve ultimate ebracteate branches ·5–·75 in. long, each terminating in an umbel of 7–10 pedicellate broadly ovate flowers nearly ·2 in. long, the pedicels ·2 in. long. *Fruit* broadly ovate, apiculate, boldly 6-ridged, 6-celled, glabrous, nearly ·25 in. long.

PERAK; at elevations of from 3000 to 5000 feet. *Scortechini* 333, 486; *King's Collector* 3827; *Wray* 4121.

This in many respects resembles *H. ellipticum*, but has larger flowers and its fruit is on shorter pedicels.

15. HEPTAPLEURUM HULLETTII, new species. A small tree, 10–15 feet high; branches stout, rugulose, deciduously pubescent. *Leaves* large, digitate; the common petiole terete, glabrous, 10–24 in. long; leaflets 7–11, coriaceous, oblong or oblong-elliptic, occasionally somewhat broader in the upper than in the lower half, shortly and abruptly acuminate, slightly narrowed to the rounded base; both surfaces glabrous, not reticulate, the midrib prominent; main nerves 5–8 pairs, distant, slightly curved and ascending, prominent on the lower surface when dry, obsolete on the upper; length 4–12 in., breadth 1·5–3·25 in.; petiolules 1·25–3·5 in., slender, glabrous. *Panicles* 9–12 inches long, terminal, several together, long and narrow, with short horizontal slender branches from ·5 to 1 in. long, bearing terminal umbels of 8–12 small 6-merous sub-globular flowers ·1 in. in diam. *Fruit* elliptic, 6-ridged, 6-celled, crowned by the 6 short distinct styles, glabrous, pedicels ·25–·3 in. long.

SINGAPORE; *Ridley* 447, 4591, 6012; *Wray* 2323; *King's Collector* 3048. JOHORE; *King* and *Hullett*.

A species resembling *H. dvaricata*, Miq.; but having leaflets with fewer nerves and no reticulations, much longer panicles and narrower fruit. It is allied also to *H. longifolium*, Seem., but the leaflets of that species have greatly more numerous main nerves, and the panicles are densely clothed with broad scale-like hairs and have longer lateral branchlets.

16. HEPTAPLEURUM RIDLEYI, new species. Scandent; young branches stout, glabrous. *Leaves* digitate; common petiole terete, glabrous, 5–10 in. long; leaflets 5, very coriaceous, oblong, oblong-elliptic or oblanceolate-oblong, acute, slightly narrowed at the base; the edges

entire, very slightly revolute when dry; both surfaces glabrous, the reticulations faint when dry; main nerves very slightly prominent on the lower surface, about 8 pairs, spreading, the intermediate nerves almost as conspicuous; length 4–6·5 in., breadth ·2–2·75 in.; petiolules unequal, ·75–2·25 in. *Panicle* terminal, glabrous, 5 or 6 in. long, with several spreading branches; the branchlets few, about ·5 in. long, each bearing an umbel of 10–20 globular flowers ·15 in. in diam. *Calyx-tube* short, widely campanulate, the limb narrowed and truncate. *Petals* 5, elliptic, glabrous. *Fruit* ovoid, somewhat succulent, smooth, faintly 6-ridged, ·25 in. long, 6-celled.

Singapore; *Ridley* 6336 and perhaps also 1890*a*.

17. Heptapleurum nervosum, new species. A small shrub; branches with glabrous bark pale brown when dry. *Leaves* digitate; the common petiole terete, 2–2·25 in. long; leaflets 6, very coriaceous, lanceolate, acute, the base narrowed; the edges entire, much recurved when dry; both surfaces glabrous, the upper shining, the lower dull; main nerves 7–10 pairs, straight, sub-horizontal, very prominent on the lower surface and deeply impressed on the upper when dry, length 1·5–2·5 in., breadth ·5–·9 in.; petiolules unequal, the middle two about ·75 in. long, the others about half as long. *Panicle* terminal, from 1·5–2 in. long, rusty-puberulous at first, afterwards glabrous, branches about 2, spreading, with short bracteoles at the base and above it, each ending in an umbel of 8–10 oblong pedicelled glabrous flowers ·2 in. long, their pedicels ·1–·15 in. long. *Calyx-tube* cylindric-campanulate, the limb truncate and entire. *Petals* narrowly triangular. *Fruit* rotund-ovoid, boldly 6-ridged, 6-celled, glabrous, ·3 in. long.

Perak, on Gunong Chabong; *Scortechini*.

A very distinct small species with rather large flowers and fruit for the genus, and prominently-nerved very coriaceous leaflets.

18. Heptapleurum Wrayi, new species. A small tree; young branches as thick as a swan's quill, furfuraceous. *Leaves* digitate; common petiole 6–9 in. long, slender, glabrous; leaflets 7–9, thinly coriaceous, elliptic, abruptly shortly and sharply acuminate, the base rounded, the edges with shallow distant sharp serrations; upper surface glabrous, the lower glaucous and with scattered minute stellate hairy scales; main nerves 7 or 9 pairs, prominent beneath, length 3–5 in., breadth 1·75–2·25 in.; petiolules unequal, 1·5–2·5 in. long. *Panicle* terminal, longer than the leaves, furfuraceous stellate-pubescent, bearing a few rather distant, horizontal or deflexed many-flowered racemes. *Flowers* ·15 in. in diam., their pedicels ·2 in. long. *Calyx-tube* funnel-shaped, its mouth with 5 short triangular spreading teeth. *Petals* 5, elliptic-oblong, glabrous, reflexed. *Fruit* globular, prominently 5-ridged,

crowned by the long confuent column of styles, glabrous, 5-celled, ·15 in. in diam.

PERAK; on Gunong Brumber Pahang, at an elevation of about 7000 feet, *Wray* 1585.

A very distinct species, at once distinguishable by its racemose panicles, and leaflets glaucous on the lower surface and with serrate edges.

19. HEPTAPLEURUM BITERNATUM, Clarke in Hook. fil. Flor. Br. Ind. II, 735. A shrub several feet high; the young shoots and the under surfaces of the leaves deciduously stellate-pubescent. *Leaves* digitately decompound or twice pinnate, with ternate leaflets at each node of the rachis; leaflets coriaceous, narrowly-oblong, acuminate, entire, the base slightly narrowed and rounded; length 2–3·5 in., breadth ·5–·75 in., petiolules ·1 in. long or less, that of the terminal leaflet ·4 in.; both surfaces minutely reticulate and shining, the upper glabrous, the lower with deciduous stellate pubescence. *Panicle* 8 in. long, but only about 1·5 in. across; the branches little-divided, stellate-hairy; bracts deciduous, pedicels ·2 in. long.

MALACCA; *Maingay* (Kew Distrib.) 684.

Known only by Maingay's fragmentary specimens.

20. HEPTAPLEURUM HETEROPHYLLUM, Seem. Rev. Hed. 40. A bush or small tree 8–12 feet high. *Lower leaves* large, ternately decompound, 24 in. across; common petiole 12–24 in. long; the upper leaves smaller and only twice digitate; the leaflets in all 3 to 5 on each petiolule, thinly coriaceous, variable in shape, oblong-lanceolate to elliptic or broadly ovate, shortly acuminate, narrowed or rounded at the base; the edges entire, rarely with 1 or 2 teeth near the apex; both surfaces minutely reticulate and glabrous, the lower minutely dotted; length 2·5–7 or even 9 in., breadth 1–2·25 in.; petiolules of the lower leaflets ·1–·25 in., that of the terminal twice as long. *Panicles* with deciduous pale stellate pubescence, solitary or several together, 10–15 in. long, and only 1·5–2 in. across; the branches horizontal, slender, each ending in an umbel of flowers on slender pedicels, the flowers bearing fertile pistils smaller than those with fertile stamens. *Fruit* narrowly oblong, boldly 5-ribbed, glabrous, 5-celled, nearly ·25 in. long, claret-coloured when ripe. Clarke in Hook. fil. Flor. Br. Ind. II, 731. *Hedera heterophylla*, Wall. Cat. 4919; G. Don. Gen. Syst. III, 394. *Paratropia heterophylla*, Presl Epimel. Bot. 250; Miq. Flor. Ind. Bat. I, Pt. I, 761.

PENANG; *Wallich, Curtis* 241, 2301 and possibly 1950. PERAK; *Scortechini* 145, 664; *King's Collector* 718, 2688, 8640, 8769.

21. HEPTAPLEURUM CURTISII, new species. A large shrub. *Lower leaves* bipinnate, the upper trifoliolate; common petioles of both about 8 in. long; leaflets thinly coriaceous, oblong-elliptic, sometimes slightly

obovate, the apex shortly acuminate, the edges entire in the lower half but with a few unequal scanty coarse sharp teeth in the upper half; the base slightly narrowed, sometimes oblique; both surfaces quite glabrous, shining and finely reticulate when dry; length 3–6 in., breadth 1·5–2·5 in.; petiolules unequal, the lateral ·1 in. long or absent, the terminal ·35–·8 in. *Panicle* terminal, shorter than the leaf-petioles, with several rusty stellate-tomentose bracts ·75 in. long at its base, 2-branched; the branches narrow, sparsely covered with scurfy pubescence; the lateral branchlets about ·75 in. long, slender, each bearing at its apex a crowded umbel of from 10–20 oblong flowers on pedicels ·15–·3 in. long. *Fruit* oblong, boldly 5-ribbed, crowned by the conical disc bearing 5 small rounded stigmas at its corners, 5-celled.

PENANG; at Pulo Bœtong, 1950.

I have seen only two specimens (and they are both of the same gathering) of this very distinct species.

4. TREVESIA, Vis.

Shrubs or small trees, prickly or unarmed, glabrous or stellate-hairy. *Leaves* palmifid or palmisect; petioles often united by a wing at their base; stipules united within the petiole, or obsolete. *Flowers* polygamous, large for the Order; umbels panicled; pedicels not jointed under the flower; bracts small or 0. *Calyx-margin* entire or toothed. *Petals* 8–12, valvate, somewhat thick, often cohering as a cap in the fertile flowers. *Stamens* equal in number to the petals. *Ovary* with as many cells as the petals; styles connate into a short column. *Fruit* ovoid, large for the Order. *Seeds* compressed; albumen uniform. DISTRIB. Species about 10; natives of Eastern India, Malaya and Polynesia.

TREVESIA PALMATA, Vis. in Mem. Acad. Torino, Ser. 2, IV, 262, *with fig.* A small single-stemmed tree 10–25 feet high; young shoots ferruginous-pubescent and very prickly. *Leaves* coriaceous, large (12–24 in. in diam.), rotund in general outline, deeply palmatifid; or, in young shoots, palmatisect, widely cordate at the base, the lobes acuminate, their edges serrate or sometimes lobulate; glabrous when adult or with a few small rufous stellate hairs on the lower surface; the lobules contracted in the middle to a pseudo-petiolule (in var. *cheirantha*); petiole often prickly, 6 to 20 in. long. *Panicles* 12–30 in. long, the branches spreading, when young clothed with reddish-brown tomentum; bracts oblong, 1 in. long, usually deciduous; pedicels 1–1·5 in. long. *Flower-buds* ·12 in. in diam. *Fruit* ovoid-rotund, the ribs not prominent, crowned by the stout style, fleshy, ·5 in. in diam. Seem. Rev. Hed 77; Kurz For. Flora Burma, I, 539; Clarke in Flor. Br. Ind. II, 732; Bœrlage in Ann.

Jard. Bot. Buitenzorg VI, 108. *Gastonia palmata*, Roxb. Hort. Beng. 33; Flor. Ind. II, 407; Lindl. in Bot. Reg. t. 894. *Gilibertia palmata*, DC. Prodr. IV, 256. *Hedera ferruginea and H. palmata*, Wall. Cat. 4909 and 4910 (partly). *Brassaiopsis confluens*, Seem. Rev. Hed. 18 (*as to the leaves*). *Aralia dubia*, Spreng. Syst. Veg. IV, 2, p. 125.

Perak; *Scortechini*; *King's Collector* 4435, 6715.

Var. *cheirantha*, Clarke in Flor. Br. Ind. II, 732; laminæ of the lobes cut away in the middle so as to expose the midrib and form a pseudo-petiolule. *Hedera? cheirantha*, Jack in Wall. Cat. 4925; Wall. Cat. 4910 *in part.*

Perak; *Wray* 2322; *King's Collector* 2308; *Scortechini* 344.

5. Dendropanax, Decne and Planch.

Unarmed glabrous trees or shrubs. *Leaves* simple, entire, (palmately 3–5-lobed on young shoots). *Umbels* solitary or in small panicles; bracts small or none; pedicels not jointed under the flower. Limb of the calyx entire or 5-toothed. *Petals* 5, free, valvate, rather thick. *Stamens* 5. *Styles* united into a column at the base, free at the apex. *Fruit* globose or ellipsoid, succulent, distinctly or obscurely 5-ribbed. *Seeds* compressed; albumen uniform. Distrib. about 12 species mostly tropical American; one Japanese; one Indo-Chinese.

Dendropanax Maingayi, new species. A shrub; young branches with corky bark, pale-brown when dry, all parts except the umbels glabrous. *Leaves* alternate or sub-opposite, thinly coriaceous, oblong-ovate, oblong or lanceolate, acute; the base rounded, sometimes slightly narrowed; the edges entire and slightly recurved when dry; both surfaces glabrous, dull, the midrib prominent on the lower and sending off near its base two bold curving nerves running at some distance from the margin to the apex and, above the origin of these, 7–8 pairs of faint horizontal nerves; length 2–3·25 in., breadth 1–1·75 in., petioles varying from ·25–1·5 in. in length. *Umbel* simple, terminal, its pedicel ·35–·5 in. long; flowers 8–12, oblong, pedicelled, ·2 in. long, their pedicels ·25–·4 in. long. *Calyx* cylindric-campanulate, puberulous, its mouth with 5 sharp triangular teeth. *Petals* broadly lanceolate, acute, quite free. *Fruit* globular, succulent, glabrous, ·3 in. in diam. *D. parviflorum*, Clarke in Hook. fil. Flor. Br. Ind. (*not of Bentham*).

Malacca; *Maingay* (Kew Distrib.) 682; *Griffith* 2685-1. Perak; *Scortechini* 308.

This *Dendropanax*, found in Malacca and Perak, does not agree with specimens of *D. parviflorum*, Benth., collected in Hongkong. It appears to me to be a distinct species hitherto un-named.

6. Arthrophyllum, Blume.

Shrubs or small trees, unarmed. *Leaves* glabrous or sub-glabrous the lower large and compoundly pinnate, the uppermost opposite and simple, the intermediate 3-foliolate; leaflets easily separable from the rachis; stipules forming a ligule within the petiole. *Inflorescence* a terminal compound umbel, the terminal umbellules peduncled; bracts very small; pedicel not jointed under the flower. *Calyx-teeth* 5, small. *Petals* 5, valvate. *Stamens* 5. *Ovary* 1-celled, 1-ovuled; style short, simple. *Fruit* (in the Indian species) ovoid, not angular. *Seed* subglobose; albumen ruminate. Distrib. Species 3, Malayan.

The 1-celled ovary is anomalous in this Order, and this genus was excluded from *Araliaceæ* by Seemann.

Lower leaves pinnately decompound ... ... 1. *A. diversifolium.*
Lower leaves simply pinnate, or at most bipinnate .. 2. *A. pinnatum.*

1. Arthrophyllum diversifolium, Blume Bijdr. 879. A shrub or small tree, all parts except the umbels glabrous. Lower leaves large, pinnately decompound, with pairs of opposite leaflets at the main divisions, the upper leaves smaller and simply pinnate, and the uppermost of all trifoliolate or simple; leaflets coriaceous, oblong or elliptic, acute, narrowed at the base, entire; length 1·5–3 in., breadth 1·25–2·25 in.; petiolules ·25–·45 in., slender. *Inflorescence* a compound umbel; the peduncles of the ultimate umbels unequal, covered with warm brown deciduous stellate tomentum; lengthening in fruit to ·5–1·5 in.; pedicels ·25 in. long; *fruit* ovoid-globose, not ridged, crowned by the conical disc, glabrous. Clarke in Hook. fil. Flor. Br. Ind. II, 734; Miq. Flor. Ind. Bat. I, Pt. I, 767. *A. javanicum*, Blume Bijdr. 879; DC. Prodr. IV, 266; Kurz For. Flor. I, 540. *A. ellipticum*, Blume and DC. l. c. *A. Blumeanum*, Zoll. & Mor. Verz. 41; Miq. l. c. I, 768. *A. ovalifolium*, Jungh. & De Vriese in Miq. l. c. t. 14. *Panax polycarpum*, Wall. Cat. 4930. *P. Jackianum*, Wall. Cat. 4931. *Hedera Jackiana*, G. Don Gen. Syst. III, 394. *H.? ovata*, Wall. Cat. 4911. *Eupteron, sp. nov.* Kurz Andam. Rep. Suppl. B 9.

Malacca; *Griffith* (Kew Distrib. 2675). Singapore; *Anderson* 48, 185; *Hullett* 351, 393; *Ridley*, 5838. Penang; *Curtis* 781. Perak *Wray* 2012, 3063; *King's Collector* and *Scortechini*, many numbers. Andaman Islands; *Kurz*.

2. Arthrophyllum pinnatum, Clarke in Hook. fil. Flor. Br. Ind. II, 734. A bush; all parts glabrous. *Leaves* pinnate, rarely bipinnate or simple; the pinnate ones 12–18 in. long and with 5–17 leaflets; leaflets varying in size, coriaceous, lanceolate, caudate-acuminate, tapering to the base; the edges entire, glabrous; length 1·25–4 in., breadth ·4–1 in., petiolule absent or only ·1 in. in length. *Umbels* with few

umbellules, their peduncles 1·5–2 in. long; pedicels glabrous or with rusty stellate deciduous pubescence; fruit sub-globose, shining, ·15 in. in diam. *Panax pinnatum*, Lamk. Dict. II, 715; DC. Prodr. IV, 254; Wall. Cat. 9057. *P. secunda*, Schultz Syst. VI, 215. *Nothopanax? pinnatum*, Miq. Flor. Ind. Bat. I, Pt. I, 766.

Penang; *Wallich*, *Maingay* (Kew Distrib.) 679. Malacca; *Maingay* 677; *Griffith* (Kew Distrib.) 2676; *Ridley* 3224. Perak; *Wray* 330, 1475; *Scortechini* 352.

7. Wardenia, new genus.

A miniature tree with prickly stem, otherwise unarmed. *Leaves* coriaceous, simple, on long terete petioles expanded at the base into a short sheath with 2 minute stipules on its inner surface. *Inflorescence* a terminal shortly-branched compound umbel. *Flowers* hermaphrodite. *Calyx-tube* narrowly campanulate, its limb with 5, small, spreading teeth. *Petals* 5, calyptrate, their edges slightly infolded, valvate below, slightly imbricate near the apex; the midribs prominent on the inner surface. *Stamens* 5, alternate with the petals; the filaments short, straight; the *anthers* versatile; the cells linear, quite separate from each other, each united by its middle to the tip of the filament. *Disc* large, fleshy, convex, covering the whole of the apex of the ovary, slightly 5-lobed. *Styles* united to form a short thick column without any distinct stigmatic enlargement; ovary 1-celled, with 2 parallel pendulous ovules. *Fruit* 2-celled, by the formation of a dissepiment not present in the ovary, 2-seeded; *seeds* compressed. A single species.

This genus is allied to *Arthrophyllum*; but its ovaries, although one-celled, have two pendulous ovules. The fruit, however, is two-celled, by the subsequent formation of a dissepiment, and is 2-seeded. The leaves moreover are all simple. The seeds of the few specimens which I have seen are quite young and the nature of the albumen cannot be made out. I have named the genus in honour of my friend Brigade-Surgeon Lt.-Colonel C. J. H. Warden, a distinguished pharmacologist and one of the authors of the *Pharmacographia Indica*.

Wardenia simplex, King. A shrub 6–8 in. high, deciduously rufous-pubescent towards the apex, prickly near the base. *Leaves* simple, elliptic, tapering gradually to the shortly acuminate apex, not narrowed to the slightly cordate base; both surfaces bearing minute scattered rusty stellate hairs; length 8–15 in., breadth 3·5–7 in., petiole 5–10 in. *Flower* buds ·1 in. in diam., conical; pedicels ·6–·9 in. long, slender, rusty-pubescent, the umbels 10–20-flowered. *Calyx* slightly rusty-pubescent. *Petals* glabrous. *Fruit* elliptic-globose, subglabrous, ·2 in. long, crowned by the calyx and by the slender conic stylar column.

Perak; near Ulu Kerling, *King's Collector* in flower during March only once collected.

8. Heteropanax, Seem.

A small unarmed tree. *Leaves* glabrous or nearly so, very large, pinnately decompound, stipules not prominent. *Panicles* large, the branches bearing umbels, stellate-hairy; bracts of umbels small, ovate, obtuse, persistent; pedicels not jointed to the flowers. *Flowers* polygamous, the female flowers most numerous in the terminal umbel. *Calyx-limb* minutely toothed. *Petals* 5, valvate. *Stamens* 5, filaments filiform, anthers ovate. *Disk* nearly flat; ovary 2-celled; styles 2, slender, free from the base, spreading, the stigmas sub-terminal. *Fruit* laterally compressed, coriaceous, almost didymous, 2-seeded. *Seeds* compressed, albumen ruminate. Species 1 or 2; Indo-Chinese.

Heteropanax fragrans, Seem. Rev. Hed. 73. A tree 40–60 feet high; all parts glabrous. *Leaves* large, the lower often 3 feet across, pinnately decompound, the pinnae with a pair of opposite leaflets at their forks; leaflets ovate or ovate-oblong, acute or acuminate; the base slightly oblique, not narrowed; variable in size (2·5–5 in. long, and 1·5–2·5 in. broad); petiolules of lateral leaflets ·1–·2 in. long, that of the terminal one ·8–1 in. *Panicles* terminal, longer than the leaves; *flowers* small, whitish-tomentose, in small condensed umbels, their pedicels under ·25 in. long; *fruit* compressed, sub-reniform, sub-glabrous, slightly glaucous, ·35 in. across. Brandis For. Flora 249 Kurz For. Flora Burma, I, 541; Clarke in Hook. fil. Flor. Br. Ind. II, 734. *Panax fragrans*, Roxb. Hort. Beng. 21; Flor. Ind. II, 76; Wall. Cat. 4929; DC. Prodr. IV, 254 (*excl. syn. of Don*).

Andaman Islands; *King's Collector*. Distrib. Brit. India, Java, China.

9. Brassaiopsis, Decne. & Planch.

Large shrubs or trees, glabrous or tomentose, armed or not. *Leaves* digitate or palmate or angled; stipules connate within the petiole, not prominent. *Umbels* in large compound panicles, young parts at least stellately tomentose; bracts not large, often persistent; pedicels rising from a dense cluster of persistent bracteoles, not jointed under the often polygamous flowers. *Calyx* 5-toothed. *Petals* 5, valvate. *Stamens* 5. *Ovary* 2-celled; styles 2, united, long or short. *Fruit* broadly globose or turbinate, 2- or (by abortion) 1-seeded. *Seed* not compressed; albumen ruminated. Distrib. Species 11; Northern Brit. India to Java.

Brassaiopsis palmata, Kurz in Journ. As. Soc. Beng. XXXIX

(1870) Pt. II, 77. A small sparingly prickly tree with simple stem slightly branched near the top; young shoots covered with tawny or rusty scurfy tomentum. *Leaves* crowded at the ends of the stem and branches, large, 9–15 in. across, coriaceous, rotund in general outline, cordate at the base; palmately lobed about half or more than half way down; the lobes 5–9, oblong, or sometimes sinuate towards the base, acuminate, serrate; upper surface glabrous, lower sub-glabrous; the petiole 10–20 in. long, without prickles, scurfy-tomentose when young, ultimately glabrous. *Inflorescence* rusty-tomentose, terminal, panicled, the ultimate branches bearing many-flowered bracteolate umbels; flowers ·15 in. across, their pedicels ·5–·7 in. long; rim of calyx narrow, irregularly toothed. *Fruit* broadly elliptic or turbinate, terete, ·3 in. long, as large as a pea, crowned by the slender column of connate styles; cocci 1 or 2, with chartaceous pericarp, 1-seeded. Kurz For. Flor. Burma I, 537; Clarke in Hook. fil. Flor. Br. Ind. II, 735. *Panax palmatum*, Roxb. Hort. Beng. 21; Flor. Ind. II, 74. *Hedera polycantha*, Wall. Pl. As. Rar. II, t. 190; Cat. 4907 B.

This species is closely allied to *B. Hainla*, Seem., from which it differs chiefly in having leaves with deeper narrower more serrate lobes, and also in having rusty instead of pale tomentum on the young shoots and inflorescence. The two are in my opinion rather too closely allied to be kept distinct as species. In his distribution, Wallich issued both under the name *Hedera polycantha* and the number 4907.

Perak; *Scortechini* 17, 146; *Ridley* 3018; *King's Collector* 2598. Distrib. Brit. India, along the base of the Himalaya; Assam and Burma.

Var. *andamanica*, lobes of leaves obovate-oblong, the edges almost entire; inflorescence a narrow panicle nearly as long as the leaves. *Araliopsis andamanica*, Kurz in Andaman Report, App. B, 9.

Andaman Islands; *Kurz, King's Collectors.*

10. Hedrelopsis, C. B. Clarke.

A glabrous unarmed tree. *Leaves* 1–3-foliolate; leaflets lanceolate, denticulate or nearly entire; base of petiole much dilated; stipules inconspicuous. *Umbels* panicled; bracts and bracteoles deciduous; pedicels jointed close under the flowers. *Calyx* margined, somewhat prominently 5-toothed. *Petals* 5, valvate. *Stamens* 5. *Ovary* 5-celled; styles connate. *Fruit* berried, large, sub-globose, crowned by the stout persistent style. *Seeds* 5–4; albumen ruminated.

Hedrelopsis Maingayi, Clarke in Hook. fil. Flor. Br. India, II, 739. Leaflets of the compound leaves membranous, ovate-lanceolate, acuminate, narrowed at the base, nerves faint, length 3–5 in., breadth 1·5–2

in., petiolules ·1–·2 in. Simple leaves as long as 8·5 in. and about 4 in. broad; petiole 1–2 inches. *Inflorescence* a panicle of umbels with puberulous peduncles 1 in. or more long. *Calyx-tube* sub-globular, puberulous. *Petals* ovate-lanceolate, spreading, ·15 in. long. *Fruit* (unripe) more than ·5 in. long, including the conical disc and persistent style.

Malacca; *Maingay* (Kew Distrib.) 683.

This plant has not been collected since Maingay's time, and it is known only from his fragmentary specimens.

11. Tupidanthus, H. f. & T.

A large glabrous shrub, at first erect but afterwards a lofty climber. *Leaves* digitate; leaflets glabrous, leathery, entire; stipules connate within the petiole. *Inflorescence* a compound umbel or small panicle; pedicels thick, not jointed under the flowers. *Calyx-margin* obsolete. *Petals* closely connate, falling off in a cap. *Stamens* very many, in two or several series. *Ovarian* cells and stigmas very numerous; the latter sessile, radiating, crowded but not connate. *Fruit* globose, depressed, succulent.

Tupidanthus calyptratus, Hook. fil. and Thoms. in Bot. Mag. t. 4908. *Leaflets* 7–9, oblong or oblong-obovate, acute or blunt, 4–7 in. long, and 1·75–3·5 in. broad, the petiolules 1–2 in.; the common petiole 6–15 in. *Inflorescence* umbellate, 3–4-branched; the branches stout, short and with large coriaceous bracts at their bases; the ultimate umbels with 3–7 pedicellate flowers nearly 1 in. across; calyx-tube glabrous, thickly coriaceous. *Stamens* 50–70, crowded. *Fruit* sub-globose, succulent, 1·25–1·5 in. in diam. when ripe. Seem. Rev. Hed. 6; Clarke in Hook. fil. Flor. Br. Ind. II, 740.

Perak; on Gunong Ulu Sungei, elevat. 4500 feet; *Wray* 1594.

Distrib. Burma; Khasia Hills and probably Java.

Mr. Wray's specimens were collected at an elevation much higher than this species ever ascends to in British India. They have smaller leaves with blunt leaflets, but are otherwise indistinguishable from the British Indian plant.

Note on the Seasonal change of Plumage in the males of the Purple Honeysucker (Arachnechthra asiatica) *and of an analogous American bird* (Coereba cyanea).—*By* F. Finn, B.A., F.Z.S., *Deputy Superintendent, Indian Museum.*

[Received and Read January 4th, 1898.]

Dr. Jerdon in his "Birds of India" (Vol I, p. 370) and Captain Shelley, in his Monograph of the *Cinnyridae*, agree in assigning to the male of our common Purple Honeysucker (*Arachnecthra asiatica*) besides its characteristic dress, a plumage much resembling that of the female, but marked with a broad purple streak down the ventral surface. Dr H. Gadow, however, in the British Museum Catalogue volume (IX, p. 58), dealing with these birds, ignores this change of plumage; and Mr. Oates, in his "Birds of British Burmah" (Vol. I, p. 322), states that the change does not take place in that country, "for full-plumaged males may be obtained all the year round." He believes also that the young males of this species are clothed in female plumage all through their first winter, and thinks that the abundance of such has probably given rise to the belief in a change of plumage.

With all due deference to the opinion of so excellent an ornithologist as Mr. Oates, however, I venture to suggest that he is wrong, and that the authors previously cited are right, with respect to this change of plumage, at any rate in Indian examples.

In the first place, the presence of full-plumaged birds all the year round is of very little weight in disproving this change. Marked individual variations occur in the period of change of plumage by birds which possess more than one dress, and specimens of such species may be found in more or less full-plumage and undress at the same date, as I have myself seen in Ducks and Dabchicks.

This consideration disposes, I think, of Mr. Oates' first argument, but I have better evidence to bring forward.

About the middle of July last year (1897) in view of my approaching visit to England on leave, I procured a number of Honeysuckers in the hope of being able to take some alive to the London Zoological Gardens, where such birds have never previously been exhibited. All the birds I kept, with one exception, were *Arachnecthra zeylonica*, but I had, and brought home safely, one male specimen of the species I am now considering.

This bird, when I got it, was in heavy moult, and mostly purple in colour, but to my great surprise (I had taken it for a young male assuming full-plumage) it gradually lost this hue, and by the time I

started for England, in the first week in August, it was in the non-breeding dress, brown above and yellow below, with the median purple streak, but still retaining the orange axillary tufts.

This specimen, unfortunately, only survived its advent at the Zoological Gardens for about a fortnight* and I do not know whether it was preserved; if it was, it was probably put in spirit, as the moult had never been properly completed, and so the plumage was in bad order. It had, however, lived long enough to show that the change above referred to does really take place; for that captivity could have so affected the bird as to change the colour of the actually growing feathers, I am not inclined to admit, and I therefore conclude that the accounts which give this bird a change of plumage are quite correct.

While on this subject, it seemed to me that I might draw the attention of ornithologists to a similar change, apparently hitherto unrecorded, in a bird which, though not believed to be allied to our Sunbirds, and inhabiting the New World, nevertheless in form and habits presents at least an analogical resemblance to these. I allude to the Yellow-winged Blue Sugar-bird (*Coereba cyanea*) of which several specimens have been exhibited in the London Zoological Society's Gardens.

During my previous acquaintance with the species there, I had been struck by the change of plumage that the male appeared to undergo, and when in England last September, I found the Society's single specimen, a male which had been acquired as long ago as 1890, actually passing into the full violet plumage from the undress stage, which had been olive-green above, and yellowish below, much resembling the coloration of the female. The tail was black, and the wings yellow and black, and the legs pink-red, as in the male in full plumage. In fact,

* I ascribe my small measure of success with living Sunbirds to the fact that I fed them too much on "slops" — sweetened milk or milk-sop. In addition to some such food given at first it would, I think, be well to supply crumbled yolk of hard-boiled egg mixed with powdered sugar, and to keep them as much on this as possible, with fruit also. None of the *Arachnecthra zeylonica* I had survived the voyage but one, and this died in the train *en route* from Plymouth to London. I saw this bird bullying the *A. asiatica* one occasion at least, and I had previously noticed that the latter bird appeared somewhat to fear its companions. When all were together in a big cage in Calcutta it kept almost entirely to one twig in the branch put in this cage, and was in general less active in its movements than *A. zeylonica*, though it seemed less sensitive to cold on the voyage. None of the male *A. zeylonica*, some of which were moulting, showed any sign of changing their bright plumage for a duller one, as suggested by Captain Shelley in his account of the species in the Monograph above quoted. Neither did they molest each other, while I remember having had to separate two male specimens of *A. asiatica* which I had previously kept, because one was getting so badly bullied by the other.

F. F.

the bird presented much the same appearance as a skin (21280 in Register, exhibited on this occasion) in the Museum collection, except that there were many more violet feathers visible.

The keepers I consulted bore me out as to the regular occurrence of the change of plumage in the male of this species; and one was of the opinion that the quills and tail changed also; but this I do not recollect seeing myself. Unfortunately this bird also soon after died, and was not preserved.

The existence of this change of colouration in the male of a *Coereba* is interesting as tending to confirm the views of those naturalists (Dr. Sclater and Messrs. Baird, Brewer and Ridgway), who place the *Coerebidae* in close connection with the Tanagers, in which group the male of *Pyranga rubra* exhibits a similar seasonal alteration of plumage.

Note on the Long-Snouted Whip-Snake (Dryophis mycterizans).—*By* F. Finn, B.A., F.Z.S., *Deputy Superintendent, Indian Museum.*

[Received and Read, January 5th, 1898.]

A common belief in India accredits the Whip-Snake with the propensity for deliberately striking at the eye. As this trait is not alluded to by either Dr. Günther or Dr. Boulenger in their accounts of the Indian Reptilia, I venture here to bring forward an instance which shows that the notion above noticed is really correct.

On December 1st, 1897, a bird-catcher, with whom I had previously had dealings, brought to my quarters two specimens of the Long-Snouted Whip-Snake (*Dryophis mycterizans*) for sale. Knowing them to be harmless, and the vendor having no fear of them, I took both in my hands and went to show them to a friend who was in an adjoining room; the larger one* having meanwhile struck at my hand, without breaking the skin. As I was exhibiting the snakes, I was rather unpleasantly surprised by finding this large specimen suddenly dart at my eye, and inflict a bite on it, which, as I had instinctively closed the threatened organ, only resulted in some small punctures on the eyelids, which were just sufficient to draw a little blood. The position of these, two on the upper, and one on the lower eyelid, sufficiently shows, I think, the deliberateness of the reptile's aim. Of course I suffered no inconvenience from the bite, although on rubbing my eye

* This stuffed skin of this specimen was exhibited, together with a sketch of the bitten eye made by the Museum artist, to show the position of the tooth-marks.
F. F.

a few hours afterwards, I removed a tooth rather over $\frac{1}{10}$ inch long from the puncture in the lower eyelid. This, however, after being examined under the microscope by Dr. Alcock and myself, proved not to be a grooved one, so that this little experience throws no light on the possible effects of *Dryophis* fangs on the human subject; I think, however, that it may be fairly allowed, in connection with the belief above mentioned, to upset the reputation for gentleness which Dr. Boulenger awards to the species.* I may say that I was not holding the snake roughly or maltreating it in any way, and that when confined afterwards in a glass case it repeatedly struck at anyone who came near, seeming to aim particularly at the face, though it soon recognized, apparently, the futility of attacking glass.

This intelligence in attack was again shown subsequently, when, having transferred the snake to a large cage of wire gauze, I endeavoured to make it attack a Gecko. This it would not do even when the lizard was thrown absolutely in its face, darting open-mouthed at me instead. It similarly refused to bite a handkerchief with which I teased it, though I have succeeded in getting *Dendrophis pictus* (a black Andaman variety) to do this.

Materials for a Carcinological Fauna of India. No. 3. The Brachyura Cyclometopa. Part I. *The Family Xanthidæ.*—*By* A. Alcock, M.B., C.M.Z.S., *Superintendent of the Indian Museum.*

[Received 20th March. Read 6th April, 1898.]

The family *Xanthidæ*, as here defined, includes the *Cancridæ* (without *Cancer* and *Pirimela*) and the *Eriphiidæ* (without *Oethra*) of Dana's system.

It is a family which, as most authors have remarked, it is almost impossible to divide into groups that shall be at once natural and sharply defined, owing to the numerous intergradations of form that exist.

The Indian species of this family, so far as I have been able to discover, number 153, of which all but the following 14 are represented in the Indian Museum :—

Carpilodes venosus Edw., *Carpilodes margaritatus* A. M. Edw., *Lachnopodus rodgersi* Stimpson, *Lophactæa fissa* Henderson, *Lophozozymus*

* I hope this will not be taken as captious criticism of Dr. Boulenger's work, for which I entertain the sincerest admiration, especially since I know that gentleman to be in the habit of studying reptiles in life when opportunity offers.

F. F.

cristatus A. M. Edw., *Hypocoelus rugosus* Henderson, *Cycloxanthus lineatus* A. M. Edw., *Halimede thurstoni* Henderson, *Cymo tuberculatus* Ortmann, *Pilumnus labyrinthicus* Miers, *Actumnus verrucosus* Henderson, *Actumnus nudus* A. M. Edw., *Heteropanope eucratoides* Stimpson, *Eurycarcinus maculatus* A. M. Edw.

The new species described in this paper have almost all been obtained by the "Investigator" and will be figured in the *Illustrations of the Zoology of the Investigator* for the year 1899, the original drawings for which are now in course of preparation.

Tribe CYCLOMETOPA.

Cyclométopes Milne Edwards, Hist. Nat. Crust. I. 264, 363 (*part.*)
Cancroidea, Dana, U. S. Expl. Exp. Crust. pt. I. p. 142 (*part.*)
Cyclométopes, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XIV. 1860, p. 183.
Cyclometopa or *Cancroidea*, Miers, Challenger Brachyura, p. 106 (*part.*)
Cancroidea Portuninea and *Cancroidea Cyclometopa* (*part.*) Ortmann, Zool. Jahrb., Syst., VII. 1893-94, pp. 65 and 411.

Carapace, almost without exception, broader than long, the antero-lateral borders generally arched, sometimes very strongly so, the postero-lateral borders generally convergent, sometimes very strongly so: the front broadish or broad, horizontal or obliquely deflexed, not rostrate.

Buccal cavern square-cut, commonly broader than long: the palp of the external maxillipeds articulating at or near the antero-internal angle of the merus.

Epistome transverse, short fore and aft.

The antennules generally fold nearly transversely.

The abdomen of the male occupies all the space between the last pair of legs.

Branchiæ nine pairs; their efferent channels opening on either side of the palate.

The genital ducts of the male open at the bases of the last pair of legs.

The Cyclométopes of Milne Edwards includes the genus *Œthra* which, following Miers, has been relegated to the Oxyrhyncha in this series of papers, and excludes the *Telphusidæ*, which by all subsequent writers have been regarded as true Cyclometopes.

The *Cancroidea* of Dana includes the genus *Acanthocyclus*. My only knowledge of this genus is derived from drawings and descriptions, which do not as yet satisfy me that *Acanthocyclus* is more nearly related to the Cyclometopes than to other groups.

The *Cyclometopa* of Miers includes not only *Acanthocyclus*, but,

following Claus, the *Corystoidea*. Now undoubtedly several of the forms included under the Corystoidea have very close relations with *Cancer* and *Pirimela*; and if *Cancer* and *Pirimela* are regarded as typical Catametopes then such (Corystoid) forms as *Atelecyclus* and *Hypopeltarium* may also be classed as Cyclometopes.

In this preliminary paper I prefer not to take *Cancer* as an ideal Cyclometope, and to leave the Corystoidea for future consideration.

The *Cyclometopa* of Ortmann includes the family *Parthenopidæ*, which in this series of papers has, in accordance with the views of other authors, been considered with the *Oxyrhyncha*; and also the Corystoid genera *Atelecyclus* and *Hypopeltarium*, the Cancrine affinities of which have been admitted. I cannot, however, think that the removal of the *Parthenopidæ* from their long approved position, as Oxyrhynchs showing a connexion between that type and the Cancrine type, serves any useful purpose.

For the purposes of this paper the Cyclometopa are divided into the following families:—

I. *Cancridæ*, in which the fold of the antennules is longitudinal or obliquely longitudinal, and the anterior boundary of the buccal cavern is somewhat indefinite, being more or less overlapped by the external maxillipeds.

Of this family, of which *Cancer* and *Pirimela* are types, no representative is known in the Indian Seas.

II. *Xanthidæ*, in which the fold of the antennules is transverse or obliquely transverse, and the anterior boundary of the buccal cavern is raised and sharply defined, so that the external maxillipeds commonly shut close against it unless they fall short of it.

III. *Portunidæ*, in which the fifth pair of legs is peculiarly modified for swimming and usually has the propodite and dactylus singularly broad thin and paddle-like.

IV. *Telphusidæ*, in which the form is Grapsoid, the branchial regions being much dilated. The members of this family inhabit fresh water and, sometimes, damp jungle.

The present paper refers to the family *Xanthidæ*.

Family XANTHIDÆ.

Canceriens arqués et *quadrilatères* Milne Edwards, Hist. Nat. Crust. I. 369.

Cancridæ (exc. *Cancrinæ* et ?*Polydectinæ*) and *Eriphidæ* (exc. *Oethrinæ*) Dana, U. S. Expl. Exp., Crust., pt. I. pp. 147, 228.

Canceriens (exc. *Oethra*, *Cancérides* et *Pirimélides*) A. Milne Edwards, Nouv. Archiv. du Mus. I. 1863, pp. 177-182.

Cancridæ (exc. *Cancer*), Miers, Challenger Brachyura, p. 106.

Xanthini (exc. *Thiidæ*), Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 412.

Carapace transversely oval or transversely hexagonal or subquadrate or (rarely) subcircular, but almost always broader than long. Front broadish or very broad, never in the form of a rostrum. The fold of the antennules is transverse or obliquely transverse. Antennary flagella short or slender. Anterior margin of buccal cavern very well defined, not overlapped by the external maxillipeds. Legs gressorial.

The *Xanthidæ* may be divided, according to the character of the palate emphasized by Dana, into two sections, as follows :—

I. *Hyperomerista*, in which the efferent branchial channel on either side is defined by a ridge on either side of the palate,—the ridge extending right up to the anterior border of the buccal cavern.

II. *Hyperolissa*, in which ridges defining the efferent branchial channels are either altogether absent or are present on the posterior part of the palate only.

I do not think that these sections, depending on a single variable character, should be considered as families, or even as subfamilies.

The section Hyperolissa, which corresponds to Dana's family Cancridæ, *minus* Cancer and Pirimela and Polydectus, is here subdivided into 3 subfamilies, hereafter characterized, namely, *Xanthinæ*, *Actæinæ*, and *Chlorodinæ*.

The section Hyperomerista, which corresponds to Dana's family Eriphiidæ, *minus* Oethra, is here subdivided into 4 subfamilies, hereafter characterized, namely, *Menippinæ*, *Oziinæ*, *Pilumninæ* and *Eriphiinæ*.

The genus *Platypilumnus*, Wood-Mason MS., Alcock, Ann. Mag. Nat. Hist. May 1894, p. 401, and Illustrations of the Zoology of the Investigator, Crustacea pl. xiv. fig. 6, probably belongs to this family and to the section *Hyperolissa*, and is probably related most nearly to *Galene ;* but as I have only a single female specimen to go by its exact position must remain undecided.

The following artificial key is meant to serve for the discrimination of the Indian genera of this family :—

Key to the Indian Genera of the Family Xanthidæ.

I. The ridges that define the efferent branchial channels, if present, are low and are confined to the posterior part of the endostome, never reaching to the anterior boundary of the buccal cavern :—

i. The front and the antero-lateral borders together form a strongly convex arch ; the postero-lateral borders markedly, and often very strongly, convergent ; the posterior border, in consequence, short :—

1. Fronto-orbital border hardly ever (in adults) more than half, most usually much less than half, the greatest width of the carapace :—

A. Carapace convex both fore and aft and from side to side across the branchial regions :—

a. The abdomen of the male consists of seven distinct movable segments, the last of which is more than twice as long as the last but one :—

x. Front very narrow and prominent, shaped like a pair of human incisors : carapace smooth ..... POLYCREMNUS.

y. Front square-cut, narrow, the two lobes not strongly convex dorsally : carapace rugose and granular .. .. HALIMEDE.

b. The abdomen of the male consists of five or six segments, owing to fusion of some, and the last is about the same length as the last but one :—

x. A deep notch in the anterior border of the merus of the external maxillipeds (abdomen of male with the 7 segments distinct, but the 3rd, 4th and 5th move together) ..... DAIRA.

y. No deep notch in the anterior border of the merus of the external maxillipeds :—

p. A large oval or reniform cavity in either pterygostomian region .. HYPOCOELUS.

q. No cavity in the pterygostomian regions :—

1. Antero-lateral borders of carapace sharp, crest-like : upper border at least of arms, and of meropodites carpopodites and propodites of legs sharp and crest-like : basal antennal joint short, touching or clasping the turned down side-edge of the front ; chelipeds equal :—

* Crest of antero-lateral border entire or slightly notched ; carapace strongly convex in both directions ; fingers sharp pointed :—

† Carapace perfectly smooth with the regions either not at all or only vaguely indicated... ATERGATIS.

† Regions and subregions of carapace well sculptured, often granular ..... LOPHACTÆA.

q. 1. (*continued*). [Antero-lateral borders sharp and crest-like: upper border of meropodites crest-like]:—

* Crest of antero-lateral border cut into four sharpish lobes; carapace moderately convex, its regions much areolated; fingers blunt, hollowed out at tip ..... ZOZYMUS.

2. Antero-lateral borders not cristiform, cut into several strong teeth: either the upper and lower inner angles of the orbit are in contact, or the outer angle of the basal antennal joint is prolonged into and completely fills the orbital hiatus:—

* Antero-lateral borders prolonged beneath the orbits to the angles of the buccal cavern; chelipeds short, hands light and narrow, fingers pointed..... EUXANTHUS.

* Antero-lateral borders normal; chelipeds long, hands very massive, fingers with broad hollowed-out (hoof-like) extremities ..... ETISUS.

3. Antero-lateral borders not cristiform; the basal antennal joint runs up between the side-edge of the front and the orbital plate, but not into the orbital hiatus; front never deeply cleft into two lobes:—

* Antero-lateral borders entire up to a strong lateral epibranchial tooth; carapace perfectly smooth, without trace of regions: chelipeds unequal, fingers pointed: front three-lobed, the middle lobe prominent with a concave edge ..... CARPILIUS.

* Antero-lateral borders divided into four broad, shallow, rounded lobes; regions and sub-regions of the carapace well demarcated; chelipeds equal, fingers somewhat hollowed at tip: front rather prominent, somewhat convex, grooved and slightly notched in the middle line..... CARPILODES.

4. Antero-lateral borders not cristiform, divided into four broad, blunt, shallow lobes, of which the first two are almost confluent; basal antennal joint simply touching the front:—

* Carapace nearly twice as broad as long, barrel-like; legs smooth ..... LIOMERA.

* Length of carapace much more than half its breadth; upper border of meropodites of legs spiny ..... LACHNOPODUS.

5. Antero-lateral borders divided into four more or less distinct lobes; regions of carapace usually profusely areolated and granular; front usually deeply and rather broadly cleft into two pointed rounded lobes: fronto-orbital border sometimes more than half the greatest width of the carapace:—
   * Fingers of ordinary form ..... ACTAEA, *part.*
   * Fingers compressed and very sharp, like blades of shears ..... BANAREIA.

B. Carapace more or less convex fore and aft, at any rate in its anterior two-thirds, flat from side to side across the branchial regions:—
   a. Basal antennal joint prolonged into the orbital hiatus: carapace three-fourths as long as broad: fingers hollowed out at tip ..... ETISODES.
   b. Basal antennal joint simply touching the front:—
      α. Carapace three-fourths as long as broad, its antero-lateral border very distinctly prolonged beneath the orbit to the angle of the buccal cavern ..... MEDAEUS.
      γ. Length of carapace usually less than three-fourths the breadth, the antero-lateral border not prolonged beneath the orbit to the angle of the buccal cavern:—
         β. Antero-lateral border thin sharp, almost crest-like, either divided into 4 large triangular teeth or quite crest-like and only faintly notched: fingers not hollowed at tip:—
            * Antero-lateral borders divided into 4 large triangular teeth: 3rd—5th abdominal terga of the male fused together with or without obliteration of sutures ... LOPHOZOZYMUS.
            * Antero-lateral borders ending, in one or both sexes, in a strong horizontal lateral epibranchial spine: all 7 abdominal segments distinct ... HOPLOXANTHUS.
         γ. Antero-lateral border not crest-like, divided into lobes or teeth which in some cases are indistinct—especially the first two of them:—
            * Fingers sharp-pointed, not hollowed at tip, antero-lateral border divided into 3 or 4 (usually 4) lobes or teeth:—

* Fingers sharp-pointed, not hollowed *(continued.)*

† Regions and subregions of carapace well defined, the lobes or teeth of the antero-lateral border very distinct :—

π. Either the front is sublamellar square-cut and prominent, or, if not, the carapace is smooth (non-granular) ..... XANTHO.

β. Antero-lateral borders very long and strongly arched ..... CYCLOXANTHUS.

φ. Front cleft into two round-pointed lobes, carapace granular ..... ACTAEA, *part.*

† Regions, save the gastric, not well defined and areolated: the 3 or 4 lobes of the antero-lateral border inconspicuous or almost obsolescent ..... LIOXANTHO.

* Fingers blunt-pointed, hollowed at tip, antero-lateral border divided into 4 or more teeth ..... LEPTODIUS.

** Fronto-orbital border much more than half the greatest width of the carapace :—

A. Carapace roughly hexagonal :—

a. Fingers pointed; basal antennal joint very short, just touching the front ..... XANTHODES.

b. Fingers hollowed at tip, basal antennal joint of good length :—

ε. Basal antennal joint running up between the turned down side-edge of the front and the orbital plate, carapace not granular or hairy :—

p. Regions and areolæ of carapace few and faint or absent altogether CHLORODIUS.

q. Regions and areolæ of carapace well sculptured ..... PHYMODIUS.

γ. Basal antennal joint prolonged into the orbital hiatus, regions and subregions of carapace well defined, granular or hairy, or both :—

p. Carapace less than three-fourths as long as broad ..... CHLORODOPSIS.

q. Carapace more than three-fourths as long as broad..... CYCLODIUS.

B. Carapace sub-circular or elongate-pentagonal, leaving 2 or 3 abdominal terga always uncovered : one cheliped enormously larger than the other ..... CYMO.

ii. Carapace more approaching a quadrilateral shape (the arch of the antero-lateral borders being less convex and not longer than the postero-lateral borders, the convergence of the postero-lateral borders less marked, and the posterior border therefore longer), strongly convex fore and aft, flat from side to side : legs long :—

1. Carapace perfectly smooth, without trace of regions, antero-lateral borders entire ..... LIAGORE.

2. Carapace more or less granular near the margins, regions defined though somewhat vaguely, antero-lateral border with lobes or teeth ; basal antennal joint not reaching the front ..... GALENE.

3. Regions well defined, to some extent areolated; antero-lateral borders cut into four sharp teeth: carapace somewhat concave from side to side owing to swelling of the branchial regions above the level of the cardiac region. ..... ORPHNOXANTHUS.

II. The ridges that define the efferent branchial channels extend to the anterior boundary of the buccal cavern, and are often very strong:—

i. Fronto-orbital borders half or less than half the greatest breadth of the carapace, which is broad and transversely-oval:—

1. The basal antennal joint does not nearly reach the front:—

A. Carapace convex, the antero-lateral borders longer than the postero-lateral:—

a. Front less than a fifth the greatest breadth of the carapace: orbital hiatus open ..... MENIPPE.

b. Front nearly a fourth the greatest breadth of the carapace: no orbital hiatus, the orbit being a completely closed cavity ..... MYOMENIPPE.

B. Carapace nearly flat, the antero-lateral borders shorter than the postero-lateral ..... PSEUDOZIUS.

2. Basal-antennal joint broadly in contact with the front:—

A. Antero-lateral border not thin and sharp: dactylus of smaller hand shorter than the lower border of the palm:—

a. Orbital hiatus open..... OZIUS.

b. No orbital hiatus, the orbit being a completely closed cavity ..... EURUPPELLIA.

B. Antero-lateral border remarkably thin and sharp: dactylus of smaller hand as long as the entire lower border of the palm ..... EPIXANTHUS.

ii. Fronto-orbital border just about two-thirds the greatest breadth of the carapace: antero-lateral borders almost always shorter than the postero-lateral:—

1. The basal antennal joint does not reach, or only just reaches, the front: the orbital hiatus is not closed:—

A. Carapace not tomentose, its regions ill defined, the first lobe of the antero-lateral border is a broad lobe confluent with the outer orbital angle:—

a. Antero-lateral border cut into 4 teeth:—

x. Indications of areolation on the carapace, anteriorly: front bilobed..... HETEROPANOPE.

y. Carapace smooth, without any trace of areolæ or regions; front cut straight and square (with a median emargination) ..... EURYCARCINUS.

b. Antero-lateral border cut into 3 teeth; branchial regions defined by a strong dorsal bulge; front cut straight and square ..... NECTOPANOPE.

B. Carapace with regions usually rather well defined and areolated: it and the legs usually, but not always, tomentose:—

a. Carapace transversely oval, flattish or moderately convex, fairly well areolated... PILUMNUS.

b. Carapace sub-circular with very concave postero-lateral borders, strongly convex, usually strongly areolated ..... ACTUMNUS.

2. Basal antennal joint broadly in contact with the front: the orbit is a completely closed cavity: foliaceous process of the 1st maxillipeds with its notched anterior margin prominent beyond the anterior margin of the external maxillipeds ... . BAPTOZIUS.

i. Fronto-orbital border much more than two-thirds the greatest breadth of the carapace: the antero-lateral borders meet the postero-lateral at a very wide and inconspicuous angle:—

1. Chelipeds longer and stouter than the legs:—

A. Merus of external maxillipeds as long as or longer than broad:—

a. Basal antennal joint as broad as long, hardly touching the front: little or nothing is seen of the arm beyond the lateral border of the carapace in repose: the gastric region plainly delimited and areolated ..... ERIPHIA.

b. Basal antennal joint slender, not or hardly touching the front: no trace of regions on the smooth polished carapace: at least half of the arm projects beyond the carapace:—

ε. Carapace flat, or little convex: no orbital hiatus:—

p. Chelipeds not very greatly unequal; arm long, ¾ visible beyond the carapace: front lobed or dentate ..... TRAPEZIA.

q. Chelipeds very markedly unequal; arm short, ½ visible beyond the carapace: front nearly straight, finely denticulate ..... TETRALIA.

n. Chelipeds subequal; arm very long, the whole of it projecting beyond the carapace: front acutely spinate ..... QUADRELLA.

γ. Carapace convex: an orbital hiatus present: front broadly bilobed: the whole arm projecting beyond the carapace..... SPHENOMERUS.

B. Merus of external maxillipeds about twice as broad as long ... . DOMECIA.

2. Chelipeds shorter and slenderer than the legs ..... MELIA.

Appendix to Hyperolissa?

Endostomial ridges sharp and salient posteriorly, very inconspicuous anteriorly. Carapace hexagonal, very thin, and perfectly flat; the postero-lateral borders longer than the spinate antero-lateral borders, and only moderately convergent; the regions very faintly delimited. Legs long and slender. The basal antennal joint does not nearly reach the front ..... PLATYPILUMNUS.

Section I. *Hyperolissa.*

Xanthidæ in which the efferent branchial channels are not defined by a complete ridge on either side of the palate.

Subfamily I. XANTHINÆ.

Carapace usually much broader than long, usually transversely oval, sometimes transversely hexagonal. The front is contained from $3\frac{1}{2}$ to $5\frac{1}{2}$ times in the greatest breadth of the carapace.

Alliance I. Carpilioida. Carapace broad, transversely oval, the antero-lateral border either entire, or divided into a few broad, shallow, rounded lobes. Legs sub-cylindrical. Abdomen of the male with the 3rd and 4th, or usually the 3rd, 4th and 5th segments fused together.

Alliance II. Zozymoida. Carapace broad, transversely oval, the antero-lateral border in the form of a sharp crest which may be either thin and entire (fissured only) or cut into 4 large teeth. Legs with at least the upper border of the merus carpus and propodus sharply cristiform. Abdomen of the male with the 3rd, 4th and 5th somites fused.

Alliance III. Euxanthoida. Carapace broad, tranversely oval, very profusely areolated in high relief; the antero-lateral borders are continued below the orbits to the outer angle of the buccal cavern. The basal antennal joint has its outer angle prolonged and impacted in the orbital hiatus, and the antennary flagellum, which is hardly visible without a lens, arises within the orbit. The abdomen of the male has the 3rd, 4th and 5th somites fused.

Alliance IV. Xanthoida. Front almost always prominent, square-cut (notched or fissured in the middle line) and sublaminar, and almost always separated from either supra-orbital margin by a deepish notch. Carapace broad (except *Medæus* and *Etisodes*), usually transversely oval, but sometimes more hexagonal; the antero-lateral border usually cut into sharp teeth. Male abdomen with segments 3–5 fused.

Alliance V. Halimedoida. Front prominent and square-cut. Carapace pentagonal, moderately broad. Abdomen of the male with all 7 segments distinct, the last segment being more than twice as long as any of the others.

Alliance VI. Galenoida. Carapace broad, pentagonal approaching the quadrilateral, the antero-lateral border hardly longer than the postero-lateral. The basal antennal joint does not nearly reach the front. The abdomen of the male has all 7 segments distinct. The sole type, *Galene*, is so singular that it might be separated as a distinct subfamily.

Subfamily II. ACTAEINÆ.

Carapace usually much broader than long and usually very profusely and profoundly lobulated; the antero-lateral border is either divided into 4 blunt lobes, or crenated. The front is about a third the greatest breadth of the carapace, sometimes a little more, sometimes a little less, and is divided into two rather prominent usually round-pointed lobes.

Subfamily III. CHLORODINÆ.

Carapace hexagonal or transversely oval, or subcircular (*Cymo*) or approaching the subcircular (*Cyclodius*). Front from a third to half the greatest breadth of the carapace—much broader than in the preceding subfamilies.

Alliance I. XANTHODEOIDA. Carapace transversely oval, front a third or little less than a third the greatest breadth of the carapace, fingers not hollowed at tip.

Alliance II. CHLORODIOIDA. Carapace transversely oval, front nearer half than a third the greatest breadth of the carapace, fingers hollowed at tip.

Alliance III. CYMOIDA. Carapace subcircular, flat; front about half the greatest breadth of the carapace: chelipeds remarkably unequal.

Subfamily I. XANTHINÆ.

Alliance I. *Carpilioida.*

Carpilius.	Liomera.	Liagore.
Carpilodes.	Lioxantho.	
	Lachnopodus.	

CARPILIUS, Leach, Desmarest, A. M. Edw.

Carpilius, Leach, Desmarest Consid. Gen. Crust. p. 104 (footnote).
Carpilius, Rüppell, 24 Krabben roth. Meer. p. 13 (part).
Carpilius, Milne Edwards, Hist. Nat. Crust. I. 380.
Carpilius, De Haan, Faun. Japon. Crust. p. 16.
Carpilius, Dana, U. S. Expl. Exp. Crust. I. p. 159.
Carpilius, A. MILNE EDWARDS. ANN, SCI. NAT. ZOOL. (iv.) XVIII. 1862, p. 46, and NOUV. ARCHIV. DU MUS. I. 1865, p. 212, and Miss. Sci. Mex., Crust. p. 238.
Carpilius, Miers, Challenger Brachyura, p. 110.

Carapace broad, very convex in both directions, smooth (except for some coarse pitting inside the frontal and antero-lateral border), with no indication of regions; its antero-lateral borders strongly-arched, thick, entire, smoothly-moulded; its postero-lateral borders strongly-conver-

gent, straight, with a prominent tubercle at the angle of junction with the antero-lateral.

Front moderately broad, (less than a third the greatest width of carapace) deflexed, 3-lobed, the middle lobe prominent and bilobulate, the edges of all thickened.

Orbital margins entire, the upper margin thickened and forming a well-marked blunt tooth at its junction with the antero-lateral margin. Eyes on short thick stalks.

Antennules folding obliquely, almost transversely: inter-antennulary septum broad.

Basal joint of antennæ long, flat, running up into an oblique cleft between the margin of the front and the infra-orbital plate; the antennary flagellum very small, less than half the diameter of the orbit and lodged in the said cleft.

Merus of the external maxillipeds with its anterior border very oblique.

Chelipeds massive, smooth, unequal in both sexes; the fingers bluntly pointed, those of the larger cheliped with a single pair of molariform teeth, those of the smaller cheliped with a blunt cutting-edge.

Legs smooth, sub-cylindrical.

Abdomen of male six-jointed—the 3rd and 4th somites fused with obliteration of sutures, the 5th somite also immovably adherent to the 4th. Large crabs.

Key to the Indian species of Carpilius.

1. Carapace with definitely disposed large red blots ... *C. maculatus.*
2. Carapace irregularly marbled with red ... ... *C. convexus.*

1. *Carpilius maculatus*, (Linn.)

Cancer ruber, Rumph, Amboinsche Rariteitkamer, p. 18, pl. x. fig. 1.

Cancer sazatile, Seba, Thesaurus, III. 47, pl. xix. fig. 12.

Cancer maculatus, Linn. Syst. Nat. (xii.) p. 1042: Fabricius, Ent. Syst. II. 447, and Suppl. p. 338: Herbst, Krabben, I. ii. 135, pl. vi. fig. 41, and I. ii. 263, pl. xxi. fig. 118, and III. iv. 8, pl. lx. fig. 2: Desmarest, Consid. Gen. Crust. p. 104.

Carpilius maculatus, Milne Edwards, Hist. Nat. Crust. I. 382, and in Cuvier Règne Animal, Crust. pl. xi. fig. 2: De Haan, Faun. Japon., Crust. p., 7 (name only): Dana, U. S. Expl. Exp., Crust. pt. I. p. 160: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 32: Alph. Milne Edwards, in Maillard's l'île Réunion, Annexe F, p. 3, and Nouv. Archiv. du Mus. 1. 1865, p. 214 and IX. 1873, p. 175: Heller, Reise Novara, Crust. p. 9: Hess, Archiv. fur Naturges. XXXI. i. 1865, pp. 133 and 171: Hoffmann, in Pollen and Van Dam, Faun. Madagasc., Crust. p. 3; Richters in Mobius Meeresf. Maurit. p. 145: F. Muller, Verh. Ges. Basel. VIII. 1886, p. 473: Miers, Challenger Brachyura, p. 111: de Man, Archiv. f. Naturges. LIII. 1887, i. p. 231, and Zool.

Jahrbuch., Syst. VIII. 1895, p. 496: Cano, Boll. Soc. Nat. Napol. III. 1889, p. 189: J. R. Henderson, Trans. Linn. Soc. Zool. (2) V. 1893, p. 353: Ortmann, Zool. Jahrbuch., Syst. VII. 1894, p. 469.

Front obliquely deflexed, the median lobe very decidedly bilobulate and separated from the lateral lobes on either side by a deep notch.

Carapace with not less than eleven large roundish dark-red blots (which seem never to competely fade even in very old Museum specimens) disposed as follows:—two on either side immediately behind the eye, the smaller and anterior one of these involving the orbital margin; three in a transverse curve across the middle of the carapace; four in another transverse line just in front of the posterior margin.

Eight specimens, from the Andamans, Nicobars, and Palk Straits.

2. *Carpilius convexus*, (Forskal) Rüppell.

Cancer convexus, Forskal, Descr. Anim. p. 88.

Cancer adspersus, Herbst, Krabben, I. ii. 264, pl. xxi. fig. 1.

Cancer marmarinus, Herbst, Krabben, III. iv. 7, pl. lx. fig. 1.

Carpilius convexus, Ruppell, 24 Krabben roth. Meer. p. 13, pl. iii. fig. 2 and pl. vi. fig. 6: Milne Edwards, Hist. Nat. Crust. I. 382, pl. xvi. figs. 9, 10: DeHaan, Faun. Japon. Crust. p. 17 (name only): Dana, U. S. Expl. Exp. Crust. pt. I. p. 159, pl. vii. fig. 5: Stimpson, Proc. Acad. Nat. Sci. Philad. 1858, p. 32: Heller, SB. Ak. Wien XLIII. 1861, p. 319: Alph. Milne Edwards in Maillard's l'ile Réunion Annexe F. p. 3, and Nouv. Archiv. du Mus. I. 1865, p. 215, and IX. 1873, p. 176: Hilgendorf in v. d. Decken's Reisen in Ost-Afrika III. i. p. 73: Hoffmann in Pollen and Van Dam, Faun. Madagasc., Crust. p. 3: Miers, P. Z. S. 1877, p. 133, and Ann. Mag. Nat. Hist. (5) II. 1878, p. 407: Richters in Möbius Meeresfauna Maurit. p. 145: E. Nauck, Zeitschr. Wiss. Zool. xxxiv. 1880, p. 56 (gastric teeth): Haswell, Cat. Austr. Crust. p. 41: F. Muller, Verh. Ges. Basel VIII. 1886, p. 473: de Man, Archiv. f. Naturges. liii. 1887, i. 232, and Zool. Jahrb. Syst. VIII. 1895, p. 496: Ortmann Zool. Jahrbuch., Syst. etc., VII. 1894, p. 469, and in Semon's Zool. Forschungsr. (Jena. Denkschr. VIII.) Crust., p. 51: Zehntner, Rev. Suisse Zool. II. 1894, p. 143.

Carpilius lividus, Gibbes, Proc. Amer. Ass. III. 1850, p. 174, is according to A. Milne Edwards, *vide* Nouv. Archiv. du Mus. I. 1865, p. 217, the young of *Carpilius convexus*. Miers also, Ann. Mag. Nat. Hist. (v) II. 1878, p. 407, considers *C. lividus* to be a synonym of *Carpilius convexus*.

Front vertically deflexed, the prominent median lobe is not decidedly bilobulate—in fact, it is sometimes but obscurely emarginate at tip—and is separated on either side from the lateral lobes by only a shallow excavation.

Carapace irregularly marbled with dark red, which in old spirit specimens sometimes fades entirely.

Seven specimens from the Andamans and Nicobars.

Carpilodes, Dana, A. Milne Edwards.

Carpilodes, Dana, Silliman's Amer. Journ. Sci. and Arts, (2) XII. 1851, p. 126, and Proc. Acad. Nat. Sci. Philad. VI. 1852, p. 77, and U. S. Expl. Exp Crust. pt. I. p. 192.

Carpilodes, Alph. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 224 (et synon.)

Carpilodes, Miers, Challenger Brachyura, p. 133.

Carpiloxanthus, Alph. Milne Edwards in Maillard's l'ile Réunion, Annexe F, p. 3. (A. M. E.)

Carapace very broad, convex in both directions, with the regions generally well demarcated and—especially in the anterior half—subdivided into lobular areolæ; its antero-lateral borders usually subdivided into four broad, shallow, rounded lobes; its postero-lateral borders straight, or a little concave, and strongly convergent.

Front broad (about a third the greatest breadth of the carapace) obliquely deflexed, grooved and slightly notched in the middle line, but not distinctly bilobed.

Orbits small, with entire margins, but usually with the three suture lines near the outer angle more or less distinct: eye-stalks short and thick.

Antennules folding obliquely, almost transversely. Basal antennal joint running up between the front and the lower orbital plate much as in *Carpilius;* the flagellum rather longer than the major diameter of the orbit.

Anterior edge of merus of external maxillipeds almost transverse.

Chelipeds equal or subequal in both sexes: fingers pointed, but distinctly grooved or hollowed near the tips.

Abdomen of the male five-jointed, the 3rd–5th somites fused.

Small crabs, easily recognizable by their short broad convex carapace, with its antero-lateral margins in the form of four broad shallow rounded lobes, its postero-lateral margins strongly convergent, and the broad deflexed rather prominent and convex front.

Key to the Indian species of Carpilodes.

I. Surface of carapace quite smooth to the naked eye :—
  i. Upper border of meropodites of legs crest-like ... *C. lophopus.*
  ii. Upper border of meropodites of legs not crest-like :—
    1. Posterior part of carapace not lobulated :—
      a. Gastric region subdivided into three lobules only ... ... *C. tristis.*
      b. Gastric region subdivided into five lobules :—
        α. Outer surface of wrist and hand smooth ... ... *C. venosus.*
        β. Outer surface of wrist nodular, of hand granular... ... *C. stimpsoni.*
    2. The whole of the carapace divided into a network of lobules by fine lines ... *C. pediger.*

II. Part or all of the surface of the carapace covered with vesiculous granules plainly visible to the naked eye :—

i. Posterior part of the carapace not lobulated :—

1. The whole of the carapace covered with granules ... ... *C. rugatus.*
2. Only the antero-lateral part of the carapace granular ... ... *C. vaillantianus.*

ii. Posterior part of the carapace more or less divided into lobules by transverse grooves: the whole surface of the carapace densely granular :—

1. A single transverse furrow behind the gastric region ... ... *C. margaritatus.*
2. Two transverse furrows (exclusive of one that helps to form the raised posterior margin) behind the gastric region :—
   a. Branchial lobules few, long, roll-like... *C. monticulosus.*
   b. Branchial lobules many, small, nodule-like ... ... *C. cariosus.*

3. *Carpilodes tristis*, Dana.

Carpilodes tristis, Dana, U. S. Expl. Exp. Crust. pt. I., p. 193, pl. ix. figs. 7*a-d* : Heller, Novara Crust. p. 17 : Alph. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 225, and IX. 1873, p. 178 : Haswell, Cat. Austr. Crust. p. 56 : F. Muller, Verh. Ges. Basel, VIII. 1886, p. 474 : de Man, Notes Leyden Mus. XII. 1890, p. 50 : J. R. Henderson, Tr. Linn. Soc., Zool., (2) V. 1893, p. 353 : Ortmann, in Semon's Zool. Forschungsr. (Jena. Denkschr. VIII) Crust. p. 51.

Surface of carapace and appendages quite smooth to the naked eye, but with a dull look due to uniform microscopic miliary granulation. Gastric region delimited from the front, from the somewhat tumid supra-orbital margins, and posteriorly, by shallow grooves, and sharply demarcated from the branchial regions by fine sharp-cut lines; and subdivided into three lobules by a fine sharp-cut X shaped median incision.

Antero-lateral borders divided into four lobes, from the intervals between which fine sharp lines run obliquely inwards to incompletely subdivide the hepatic and branchial regions into lobules. Outer part of hepatic regions on a plane slightly lower than that of the rest of the carapace.

Colours in spirit: uniform dull brownish-buff, except the fingers and a large part of the lower border of the hand, which are black.

79 specimens from the Andamans and Nicobars.

4. *Carpilodes stimpsoni*, A. Milne Edwards.

Carpilodes stimpsoni, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 232, pl. xi. figs. 2-2c, and IX. 1873, p. 181 : de Man, Archiv. fur Naturges. LIII. 1887, i. p. 234, and Journ. Linn. Soc., Zool., vol. XXII. 1887-88, p. 25.

Differs from *Carpilodes tristis* Dana in the following more conspicuous particulars:—

(1) the surface of the carapace is of a shiny smoothness, except for some irregular pitting on the lobules of the anterior portion:

(2) the gastric region is subdivided into five longitudinal lobules (as in all the following species) by incisions running almost parallel with the limbs of the X shaped median incision:

(3) the chelipeds have the upper and outer surface of the wrist nodular and of the hand granular, and the upper surface of the corresponding joints and merus of the legs nodular:

(4) the colour in spirit is light yellowish.

A single specimen from Mergui.

It appears to me very doubtful whether this species is really distinct from *C. venosus*.

5. *Carpilodes venosus*, (Edw.)

Carpilius venosus, Milne Edwards, Hist. Nat. Crust. I. 383.

Carpilodes venosus, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 227, pl. xii. figs. 2-2b, and IX. 1873, p. 179: Miers, Zool. H. M. S. "Alert," pp. 183 and 213: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 353.

Xantho obtusus, De Haan, Faun. Japon. Crust., p. 47, pl. xiii. fig. 5: Krauss, Sudafr. Crust. p. 31.

Included in the Indian fauna on the authority of Dr. J. R. Henderson: there are no specimens in the Indian Museum referable to this species, unless (as, indeed, I believe) *C. stimpsoni* is synonymous.

From Milne Edwards' figures this species differs from *C. stimpsoni* in having the chelipeds and legs perfectly smooth.

6. *Carpilodes pediger*, n. sp.

Allied to *C. venosus* and *stimpsoni*, from which it differs in having the whole of the carapace mapped out in lobules.

Most closely allied to *C. ruber* A. M. Edw., from which it conspicuously differs in the form of the male chelipeds.

Carapace extremely convex in both directions, its surface, like that of the appendages, being perfectly smooth to the naked eye though very finely granular under the lens: it is symmetrically and minutely subdivided by fine lines into very many little-convex and rather angular-outlined lobules. The antero-lateral borders are rather deeply four-lobed, the prominence of the outer angle of the orbit forming a small fifth lobule.

The chelipeds in the adult male are close upon twice the length of the carapace and have a very strong tooth on the inner upper border of

the wrist, and strongly-arched fingers which meet only at the tip, the movable finger bearing (in addition to the serrations of the hollow tip) a strong tooth near the base.

In the adult female the chelipeds are very little longer than the carapace and have only a small tooth on the wrist, and fingers which are not strongly arched but meet through the greater part of their extent.

Colours in spirit, light straw, fingers very light brownish: sometimes the wings of the carapace are light grey and then there is also a light grey stripe down the middle of the carapace, fore and aft.

Length of carapace 6·5 millim., breadth 10 millim.

Off Andaman Is. 10–41 fms., off Ceylon 26½ fms.

Seven specimens.

7. *Carpilodes lophopus*, n. sp.

All parts are smooth to the naked eye, though under the lens the surface of the carapace and chelipeds is minutely pitted or eroded. The regions are demarcated and subdivided by very fine lines; and the lateral gastric areolæ (2 M of Dana) and the mid-branchial areolæ (4 and 5 L of Dana) are particularly, and rather angularly, convex.

The antero-lateral borders are four-lobed, the last two lobes being rather angular; the postero-lateral borders are markedly concave.

The front is broad and projects well beyond the orbits.

Chelipeds not very much longer than the carapace: two little tubercles, one above the other, at the inner angle of the wrist, and two at the distal end of the upper border of the hand.

The upper border of the meropodites of the legs is distinctly cristiform, that of the carpopodites is sinuous-cristiform, and both the upper and the lower edges of the propodites are cristiform—the lower more distinctly than the upper.

Colours in spirit, yellowish white.

Carapace about 5·5 millim. long, abont 8·5 millim. broad.

Off south-east coast of Ceylon, 34 fms., a male and a female; a female from off Malabar coast, 29 fms.

8. *Carpilodes rugatus*, (Latr.) A. Milne Edwards.

Zozymus rugatus, Milne Edwards, Hist. Nat. Crust. I. 385, (A. M. E.)

Zozymus canaliculatus, Lucas, Voy. Astrolabe, Crust. p. 21, pl. iii. fig. 2 (A. M. E.)

Carpilozanthus rugatus, A. Milne Edwards in Maillard's l'ile Réunion, Annexe F, p. 3. (A. M. E.)

Carpilodes rugatus, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 230, pl. xii. figs. 3, 3*b*, and IX. 1873, p. 180: Richters in Möbius Meeresf. Maurit. p. 146: Miers, Zool. H. M. S. "Alert," pp. 517 and 529.

Surface of carapace uniformly covered with granules which are visible to the naked eye and on the antero-lateral parts of the carapace are vesiculous: the upper and outer surfaces of the wrist and hand, and of the corresponding joints of the legs, are closely granular to the naked eye, the granules of the hand being arranged in longitudinal series.

As in all the Indian species of Carpilodes except *C. tristis*, the frontal and supra-orbital borders are cut off from the rest of the carapace by a sinuous groove which also includes the two front lobes of the four-lobed antero-lateral border, and the gastric region is longitudinally 5-lobular.

Transverse grooves running from the last two intervals between the lobes of the antero-lateral border cut off, respectively, (1) the hepatic from the branchial regions, and (2) the first branchial lobule from the rest of the branchial region. All the lobules are strongly convex.

The cardiac region is not defined, and there is no lobulation of the posterior moiety of the carapace.

Colours in spirit—pink, fingers purplish-brown with white tips.

3 specimens from the Cocos Islands (Andamans).

9. *Carpilodes vaillantianus*, A. Milne Edwards.

Carpiloranthus vaillantianus, A. Milne Edwards, in Maillard's l'île Réunion Annexe F, p. 3. (A. M. E.)

Carpilodes vaillantianus, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 231, pl. xi. figs. 3-3b. Haswell, Cat. Austral. Crust. p. 57: Miers, Zool. H. M. S. "Alert," p. 529: de Man, Archiv. f. Naturges. LIII. 1887, i. p. 235: Ortmann in Semon's Zool. Forschungsr. (Jenaische Denksch. VIII.), Crust. p. 51.

This species, if it is really distinct from *C. rugatus*, differs from the latter in the following particulars:—

(1) the granulation is confined to the antero-lateral parts of the carapace:

(2) the lobules of the carapace are less convex:

(3) the furrow that cuts off the anterior branchial lobule does not meet the furrow that bounds the gastric region.

Among 17 specimens in the Indian Museum there is a good deal of variation of these characters; so much so, that some of the specimens might almost be referred to *C. rugatus*, especially to the "Astrolabe" figure.

Five specimens from the Andamans, three from Muscat, two from Mergui; (the others from Mauritius, Samoa, and Viti).

10. *Carpilodes margaritatus*, A. Milne Edwards.

Carpilodes margaritatus, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873,

p. 182, pl. v. fig. 2: Henderson, Trans. Linn. Soc. Zool. (2) V. 1893, p. 353: Whitelegge, Mem. Austral. Mus. III. 1897, p. 131.

Carapace and legs covered with pearly granules plainly visible to the naked eye. The carapace is much lobulate, the anterior branchial lobe being itself trilobulate, and the region behind the gastric region being crossed transversely by a furrow. The antero-lateral borders are *indistinctly* four-lobed. *The hands are not longitudinally furrowed.*

Colours; red, fingers black.

No specimens in the Indian Museum collection. Included here on the authority of Dr. J. R. Henderson.

11. *Carpilodes cariosus*, n. sp.

Allied to *C. margaritatus.*

Carapace strongly convex, its whole surface intricately cut up, by deep grooves, into many small strongly-convex lobules, the surface of which is pitted and granular, so as to give the carapace as a whole a somewhat worm-eaten appearance.

The legs also have the extensor surfaces of the long joints granular and nodular: the outer surface of the wrist is nodular: the outer surface of the hand is granular and furrowed.

The antero-lateral borders are very distinctly four-lobed.

The space between the gastric region and the posterior border of the carapace is broken by two (or three, counting the groove inside the raised posterior border) deep transverse grooves, the space between the grooves being Cupid's-bow-shaped. A transverse groove also cuts off a narrow piece from the posterior extreme of the mesogastric lobule.

Colours in spirit; whitish with pink spots on carapace, legs pink, fingers sometimes black with white tips, sometimes pinkish white.

Length of carapace about 5 millim., breadth about 7 millim.

Off Ceylon 26½ to 34 fms., 13 specimens including several ovigerous females: off Andamans 10 to 15 fms., 2 specimens.

12. *Carpilodes monticulosus*, A. Milne Edwards.

Carpilodes monticulosus, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 181, pl. v. fig. 1: de Man, Archiv. f. Naturges. LIII. 1887, i. p. 233: Ortmann in Semon's Forschungsreisen (Jena. Denkschr. VIII.) Crust. p. 51.

Carapace very broad (not far short of twice as broad as long), its surface everywhere closely covered with elegant vesiculous granules. The whole of the carapace is divided, by deep broadish grooves, into elongate lobules of an elegant smooth roll-like form (quite unlike any other Indian species). A narrow beaded lobule forms the posterior limit of the mesogastric lobe (much as in *C. cariosus*), and two

furrows cross transversely the region between the latter and the posterior border of the carapace. On the branchial regions, on either side of the mesogastric lobule, is a small dimpled lobule. The wrist and hand are closely covered with granules like those on the carapace, the wrist being dimpled and the hand longitudinally furrowed.

The extensor surfaces of the legs are also closely, but much more finely, granular, the carpus in all being dimpled.

Antero-lateral borders four-lobed, the lobes narrow, rather shallow, rounded, and the last three of nearly equal size.

Colours in spirit; dark purplish-red, legs lighter, fingers white with brownish base.

Two specimens, from Gt. Coco I. (Andamans) and East I., Andamans are in the Indian Museum.

Carapace not quite 6 millim. long, 10 millim. broad.

Liomera, Dana.

Liomera, Dana Silliman's Amer. Journ. Sci. and Arts (2) XII. 1851, p. 124; Proc. Acad. Nat. Sci. Philad. 1852, p. 73; and U. S. Expl. Exp. Crust. pt. I. p. 160.

Liomera, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 218, and Exp. Sci. Mex. Crust. p. 239.

Carapace extremely broad, strongly convex in both directions, transversely barrel-like, either smooth or with the regions very faintly indicated; its antero-lateral borders thick, either entire or divided into four broad shallow rounded lobes, of which the first two are almost coalescent; its postero-lateral borders very strongly convergent, straight or a little concave.

Front narrow (from a third to less than a fourth the breadth of the carapace), obliquely deflexed, grooved and slightly notched in the middle line, but not distinctly bilobed.

Orbits small, with the three suture lines near the outer angle usually distinct; eye-stalks short and thick.

The antennules fold nearly transversely. Basal antennal joint broad and short, merely touching the front; the flagellum, which is short, lodged in the orbital hiatus.

Anterior edge of merus of external maxillipeds a little oblique.

Chelipeds equal or subequal in both sexes; fingers somewhat hollowed at tip. Legs sub-cylindrical.

Abdomen of the male five-jointed, the 3rd—5th somites being fused.

Small or medium-sized crabs, easily recognized by their short, very broad, strongly convex, barrel-like carapace.

13. *Liomera cinctimana*, (White), Dana.

Carpilius cinctimanus, White, in Jukes Voyage H. M. S. "Fly," Vol. II. p. 336, pl. ii. fig. 3, and Samarang Crust. p. 37, pl. vii. fig. 4.

Liomera cinctimana, Dana, Silliman's Journ. (2) XII. 1851, p. 124, and U. S. Expl. Exp. Crust. pt. I. p. 161: A. Milne Edwards Nouv. Archiv. du Mus. I. 1865, p. 219, and IX. 1873, p. 176, pl. v. fig. 4, and Exp. Sci. Mex. Crust. p. 240: Stimpson, Ann. Lyc. New York, X. 1874, p. 103.

Carpilodes cinctimanus, Miers, Ann. Mag. Nat. Hist. (5) V. 1880, p. 234: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 354.

Liomera lata, Dana, Proc. Ac. Nat. Sci., Philad. 1852, p. 73, and U. S. Expl. Exp. Crust. pt. I. p. 161, pl. vii, figs 6a–d: Stimpson, Proc. Acad. Nat. Sci. Phil. 1858, p. 32, and Ann. Lyc. New York, X. 1874, p. 104: Heller, Novara Crust. p. 9: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 220, and Exp. Sci. Mex., Crust. p. 240: F. Muller, Verh. Ges. Basel. VIII. p. 474.

Carapace extremely broad—its length only about $\frac{8}{15}$ of its breadth—its surface, like that of the appendages, everywhere smooth and polished, showing only the faintest indications of a gastro-cardiac region and of oblique lobulation of the branchial regions: the antero-lateral border is divided into three coarse lobes, the anterior of which is again obscurely divided into two.

Front obliquely deflexed, with a rather prominent convex edge cleft in the middle line. Orbital margin with three radiating suture-lines near the outer angle. Chelipeds equal.

Colours in spirit; orange-red, fingers black, hand with a broad black cross-band merging with the black of the immobile finger.

3 specimens from the Andamans and Muscat (besides specimens from Mauritius and South Sea Is.).

14. ? *Liomera soddlis*, n. sp.

Carapace broad (length about $\frac{2}{3}$ breadth) very strongly convex, perfectly smooth, without any indication of regions, its margins smooth, entire. Front nearly vertically deflexed, its edge cleft in the middle line. Eyes large, supra-orbital margin without any suture-lines. Chelipeds a little unequal; the upper and outer surfaces of the carpus and hand of the smaller cheliped covered with prickly granules, but in the larger cheliped the granulation has a very much worn appearance: fingers hardly hollowed at tip.

Legs (those that are present in the unique specimen) somewhat hairy; none of the joints are carinate though some have prickly granules on the upper surface.

Colours in spirit—of the same blotchy orange and reddish colour as that of a species of *Solenocaulon*, in the hollow stem of which the crab was found.

Length of carapace 6 millim., breadth 9 millim.

Off south-east corner of Ceylon, 32 fms.

This species resembles a small *Atergatis*, but has sub-cylindrical legs and has no margin to the carapace.

Lachnopodus, Stimpson.

Lachnopodus, Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 32: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 233: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 452.

"Carapax laevis, regione posticâ transversim convexâ. Orbita margine externâ trifissâ vel trilobatâ, lobis parvis, obtusis. Antennæ ut in Carpilio (ut in Liomerâ?). Gnathopoda intima laciniâ ad apicem non furcatâ. Hectognathopoda ischio longitudinaliter sulcato; mero superficie versus angulum internum excavatâ, margine anteriore concavâ. Chelopoda manu facie externâ sulcatâ. Pedes ambulatorii valde setosi, mero compresso, superne spinoso.

"Liomeræ affinis, sed carapace angustiore, pedibus setosis spinosisque."

This genus is not represented in the Indian Museum.

15. *Lachnopodus rodgersii*, Stimpson.

Lachnopodus rodgersii, Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 32.

Liomera rodgersii, Miers, Ann. Mag. Nat. Hist. (5) V. 1880, p. 231, pl. xiii. fig. 3, (orbit and antennæ only): de Man, Archiv. für Naturges. LIII. 1887, i. p. 237: J. R. Henderson, Trans. Linn. Soc. Zool. (2) V. 1893, p. 354.

"Carapace transverse, about once and a half as broad as long, smooth, glabrous, and shining, with the interregional sutures almost obsolete; the two posterior teeth of the antero-lateral margins are the only ones developed, and are very obscurely marked and obtuse. The front is somewhat produced, and is divided by a median and two lateral incisions into four lobes, of which the two median are broad and truncated, and the lateral (or inner orbital lobes) are small and dentiform. On the upper orbital margin are three small obtuse teeth (including that of the outer orbital angle); the tooth at the inner and lower orbital angle is rather prominent. The merus-joint of the outer maxillipeds is rather small and transverse; and this joint has a shallow pit on its outer surface. The anterior legs (in the male) are rubust, smooth; arm or merus-joint with a series of spinules on its upper margin; carpus smooth, with an antero-internal tooth; penulti-

mate joint or palm slightly rugose externally, and with two longitudinal and parallel grooves on its outer surface; fingers short, robust, toothed on their inner margins and with the apices not excavated. The ambulatory legs are somewhat compressed and clothed with long fulvous hairs; their merus-joints are spinulose on their upper margins. The postabdomen of the male is five-jointed, the third to fifth joints being coalescent. Length 8½ lines, breadth nearly 1 inch 1 line.

This species has been hitherto known only from the very short generic definition of Dr. Stimpson, which, however, embraces all the characteristic peculiarities of the species, and which agrees exactly with the example before me, except in one point. Stimpson says (l. c.), "Antennae ut in *Carpilio*." In the specimen now before me the antennae are of the same structure as in *Liomera*, the basal joint being very short and united at its summit to an inferior prolongation of the front, and not, as in *Carpilius*, joined to the front along its inner margin. I have little doubt that Stimpson erroneously wrote *Carpilius* for *Liomera*, as he does not say that *Lachnopodus* is distinguished from *Liomera* by any peculiarity in the structure of the antennæ.

I do not think that *Lachnopodus* is generically distinct, as Milne Edwards has described a *Liomera* (*L. longimana*) with hairy ambulatory legs." (Miers.)

Genus Lioxantho.

Carapace broad, moderately or strongly convex in its anterior two-thirds, flat posteriorly; the gastric region is fairly or faintly delimited, and one or two short furrows may pass on to it obliquely from the intervals between the lobes of the antero-lateral margin, but beyond this there is no distinct division of the carapace into regions or sub-regions.

The antero-lateral borders are much like that of *Liomera*, being divided into 4 broad blunt lobes, of which the first two are so much coalescent as to really form but one.

Front somewhat deflexed, bilobed, or sinuous and notched in the middle line. Fronto-orbital border less than half the greatest width of he carapace.

Orbital margin and antennæ as in *Xantho*.

Anterior edge of merus of external maxillipeds a little more oblique than in *Xantho*.

Chelipeds either subequal or unequal in both sexes, fingers pointed. Legs subcylindrical.

Abdomen of male five-jointed, the 3rd–5th somites coalescent.

Key to the species of the genus Lioxantho.

I. Chelipeds unequal, outer angles of front separated from the supra-orbital margin by a notch; regional markings of carapace almost obsolete ... ... *L. tumidus.*

II. Chelipeds equal, outer angles of front fused with supra-orbital margin:—

i. Carapace chelipeds and legs smooth as wax ... *L. punctatus.*

ii. Carapace chelipeds and legs uniformly closely and finely granular ... ... *L. asperatus.*

16. *Lioxantho punctatus*, (Edw.)

Xantho punctatus, Milne Edwards, Hist. Nat. Crust. I. 396: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 199, pl. vii. fig. 6: Miers, Challenger Brachyura, p. 125: de Man, Zool. Jahrb. Syst. IV. 1889, p. 420, and Notes Leyden Mus. XII. 1890, p. 52, pl. iii. fig. 1.

Liomera punctata, Miers, Zool. H. M. S. Alert, pp. 517, 528: de Man, Archiv. fur Naturges. LIII. 1887, i. p. 238: J. R. Henderson, Trans. Linn. Soc. Zool., (2) V. 1893, p. 354: Ortmann, Zool. Jahrb., Syst. VII. 1893-94, p. 451.

Carapace moderately convex in the anterior two-thirds, flat posteriorly, its surface smooth. The gastric region is fairly well defined antero-laterally, and the fronto-orbital region marked off, by distinct grooves; and two short grooves (of which the anterior is the longer) pass in obliquely from the notches between the 2nd and 3rd, and 3rd and 4th lobes of the antero-lateral margin; but this is all the areolation that exists.

Antero-lateral border moulded into four broad shallow lobes, of which the first two are almost coalescent.

Front bilobed, the outer angle of each lobe fused with the supra-orbital border, as in *Xantho impressus* and as in no other Indian species of *Xantho*: the width of the front is about a fourth the greatest breadth of the carapace.

Chelipeds equal in both sexes, perfectly smooth, although a very indistinct groove sometimes runs about half way along the outer surface of the hand near the upper border.

Legs thickish, smooth, the dactylus with some fur and a few short hairs.

Colours in spirit; pinkish yellow or buff, with small red spots on carapace, and ill-defined pinkish-brown patches on chelipeds and legs; fingers black, with light brown tips.

In the Indian Museum are 3 specimens from Ceylon, (as well as 8 from Mauritius and 2 from Samoa).

17. *Lioxantho tumidus*, n. sp.

Carapace in its anterior two-thirds strongly convex from before

backwards and a little convex from side to side, flat in its posterior third; perfectly smooth and polished. The limits of the gastric region, and its division into three sub-regions, are faintly apparent as mere markings, not grooves; and the fronto-orbital region is marked off by a faint groove.

The antero-lateral border is divided into four broad shallow lobes, of which the first two are almost confluent; from the notch between the second and third a short groove runs obliquely inwards on to the carapace, and a still shorter one from the notch between the third and fourth.

Front much less than a fourth the greatest width of the carapace, bilobed, the outer angle of each lobe separated from the supra-orbital margin by a notch and groove.

Chelipeds unequal, smooth and polished.

Legs rather thick, smooth; a few scattered hairs along the upper border of the last three and along the lower border of the last two joints, the dactylus also furred. The upper border of the meropodites of all the legs, as well as of the arm, is microscopically serrulate or crenulate.

Colours in spirit pinkish yellow, fingers black with light brown tips.

In the Indian Museum are 3 specimens from the Andamans, (and one from Samoa).

This species exactly resembles a quite smooth and strongly-inflated *Xantho bidentatus*, and but that I have 4 specimens, representing both sexes and different ages, I should have regarded it as an abnormality of that species.

It also has a remarkable resemblance to the *Xantho* (*Lachnopodus*) *tahitensis* figured and described by de Man in Zool. Jahrb. Syst. IV. 1889, p. 418, pl. ix. fig. 4; but it has not the row of strong spines along the upper border of the meropodites of the chelipeds and legs, that are characteristic of that species.

18. *Lioxantho asperatus*, n. sp.

Carapace very slightly convex fore and aft in its anterior two-thirds, quite flat posteriorly and from side to side, very closely sharply and uniformly granular everywhere except the posterior median portion, where the granulation is visible only under a lens. The gastric region is faintly delimited, a short bifurcating groove runs in from the frontal notch, and two very faint grooves run in obliquely from the two notches of the antero-lateral margins, but this is all the attempt at areolation that exists.

Antero-lateral border granular and rather sharp, very obscurely divided into three most inconspicuous lobes, the first of which hardly shows a trace of subdivision.

Front not quite a fourth the greatest breadth of the carapace, obliquely deflexed, emarginate and faintly grooved in the middle line, its outer angles not separated from the supra-orbital margin.

Chelipeds equal, the upper corner of the outer surface of the arm, the upper and outer surfaces of the wrists and hands, closely covered with little pearly granules like those on the antero-lateral parts of the carapace.

Legs stout: the upper edge of the merus and the dorsal surface of the next two joints granular like the chelipeds, the dactylus hairy.

Colours in spirit orange-yellow.

In the Indian Museum are a male and female probably from Karáchi.

Liagore, De Haan.

Liagore, De Haan, Faun. Japon. Crust. p. 19.

Liagora, Dana, Amer. Jour. Sci. and Arts (2) XII. 1851, p. 124; and U. S. Expl. Exp. Crust. pt. I. p. 148.

Carapace somewhat approaching the quadrilateral, strongly convex fore-and-aft, little convex from side to side, smooth, without any indication of regions.

Antero-lateral border moderately arched, entire; postero-lateral border very moderately convergent, straight, about as long as the chord of the antero-lateral; posterior border long,—about half the greatest width of the carapace in length, or more.

Fronto-orbital border about half, front about quarter, the greatest width of the carapace in extent. Front a little deflexed, broadly bilobed. Orbital margin thin entire, the outer angle of orbit a little thickened. Eyes on very short thick stalks.

The antennules fold nearly transversely. Basal antennal joint very short and broad, but passing up between the side of the front and the inner angle of the orbit; the flagellum, which is about as long as the major diameter of the orbit, lodged in the orbital hiatus.

Anterior edge of merus of external maxillipeds somewhat oblique.

Chelipeds massive, equal in both sexes, the fingers pointed.

Legs subcylindrical, rather long, smooth.

Abdomen of male five-jointed, the 3rd–5th somites fused.

19. *Liagore rubromaculata*, De Haan.

Cancer (*Liagore*) *rubromaculatus*, De Haan, Faun. Japon. Crust. p. 49, pl. v. fig. 1.

Liagore rubromaculata Miers, Ann. Mag. Nat. Hist. (5) II. 1878, p. 407 (note): and Challenger Brachyura, p. 111, (footnote).

Carapace transversely somewhat oval, approximating the quadrilateral type, with long posterior and only moderately convergent postero-lateral borders; its surface devoid of sculpture and perfectly smooth to the naked eye, microscopically pitted and granular: pterygostomian region somewhat hairy.

Antero-lateral border moderately sharp, entire. Front broadly and rather faintly bilobed, the outer angles of each lobe pronounced, prominent, and separated from the supra-orbital margin by a short shallow groove. A little pimple-like thickening at the outer angle of the orbit.

Chelipeds equal, smooth and polished: both borders of the arm hairy, the upper border with a few blunt denticles; both the inner and the outer angles of the wrist strongly pronounced; fingers long, pointed, with the opposed edges strongly but bluntly serrate.

Legs long, subcylindrical, smooth and polished, the dactyli most elegantly plumed.

Colours in spirit yellowish with numerous large livid red spots.

In the Indian Museum is a single specimen dredged off the Irrawaddy Delta in 20 fms., (besides 8 from Hongkong).

Alliance II. *Zozymoida.*

Atergatis. Lophactæa. Zozymus. Lophozozymus.

Atergatis, De Haan, A. Milne Edw.

Atergatis, De Haan, Fann. Japon. Crust. p. 17.

Atergatis, Dana, Silliman's Journ. Sci. and Arts (2) XII. 1851, p. 124, and U. S. Expl. Exp. Crust. pl. I. p. 57.

Atergatis, A. Milne Edwards, Ann. Sci. Nat. Zool. (4) XVIII. 1862, p. 49, and Nouv. Archiv. du Mus. I. 1865, p. 231.

Atergatis, Miers, Challenger Brachyura, p. 111.

Platypodia, Bell, Trans. Zool. Soc. I. 1835, p. 336.

Carapace externally broad, convex in both directions, regional boundaries absent or quite inconspicuous, surface either quite smooth or somewhat pitted; its antero-lateral borders strongly arched and *with an independent keel-like edge;* the postero-lateral strongly convergent, straight. The under surface of the wings of the carapace is a good deal hollowed to receive the wrists and hands in flexion.

Front narrow (from a fourth to less than a fifth the greatest breadth of the carapace) more or less deflexed, its edge shaped like cupid's bow (*i.e.*, not bilobed).

Orbital margin with the three suture-lines near the outer angle fine and faint but distinct: eyestalks short and thick, eyes small.

Antennules folding transversely, inter-antennulary septum broad.

Basal joint of antennæ short, touching the front only at their antero-external angle; flagellum lodged in the orbital hiatus, short (less than the major diameter of the orbit).

Merus of external maxillipeds with the anterior border almost transverse.

Chelipeds subequal in both sexes; fingers pointed, not distinctly hollowed at tip.

Legs with the upper border of the merus carpus and propus, and the lower border of the merus and propus, sharply carinate or cristate.

Abdomen of the male five-jointed, the 3–5th somites being fused.

Medium-size and large crabs.

Key to the Indian species of Atergatis.

I. Edge of antero-lateral borders of carapace sharp and crest-like, forming a tooth or ridge at the lateral epibranchial angle:—
  i. Carapace with an even surface, without indications of regions:—
    1. Surface of external maxillipeds almost devoid of hair; no comb-like tufts of hair on the legs ... ... *A. integerrimus.*
    2. Surface of external maxillipeds like a door-mat; comb-like tufts of thick hair on the under surface of some of the joints of the legs ... ... *A. dilatatus.*
  ii. Carapace with the surface somewhat lumpy; variegated with spots and confluent blotches ... *A. floridus.*

II. Edge of antero-lateral borders of carapace thick and blunt; no ridge or tooth at the lateral epibranchial angle ... ... *A. roseus.*

20. *Atergatis integerrimus* (Lam.)

Cancer integerrimus, Lamarck, Hist. Nat. Anim. sans Vert. V. Crust. p. 272: Milne Edwards, Hist. Nat. Crust. I. 374 and in Cuvier's Règne An. Crust. pl. xi *bis.*, fig. 1.

Atergatis integerrimus, De Haan, Faun. Japon. Crust. p. 45, pl. xiv. fig. 1: Dana U. S. Expl. Exp. Crust. pt. I. p. 158: Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 32: A. Milne Edwards, Nouv. Arch. du Mus. I. 1865, p. 235: Miers, Ann. Mag. Nat. Hist. (5) V. 1880, p. 231: Richters, in Möbius Meeresf. Maurit. p. 145: F. Muller, Verh. Ges. Basel, VIII. 1886, p. 474: de Man, Archiv. fur Naturges. LIII. 1887, i. p. 244, and Journ. Linn. Soc., Zool., XXII. 1888, p. 24, and Zool. Jahrbuch. Syst. VIII. 1895, p. 496: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1890 p. 109:

J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 352: Ortmann, Zool. Jahrbuch Syst. VII. 1894, p. 462.

Atergatis subdivisus, White, Ann. Mag. Nat. Hist. (2) 1848, p. 284, and Samarang Crust. p. 38, pl. viii. fig. 3.

?*Atergatis subdentatus*, De Haan, Faun. Jap. Crust. p. 46, pl. iii. fig. 1: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 236.

Carapace, length from about $\frac{4}{5}$ to about $\frac{5}{6}$ the breadth; its surface in the anterior third or half irregularly and rather distantly pitted, especially near the front and antero-lateral borders: except for two faint creases that partly show the cardiac region, there are no other traces of regional divisions.

The crest-like edge of the antero-lateral border turns in at the lateral epibranchial angle to form a stout ridge there: this edge sometimes shows traces of two or three fissures.

The front, which is little prominent, meets the antero-lateral borders at a wide but very distinct angle.

Orbits very small, their width being much less than a third the width of the front.

Surface of the external maxillipeds either quite smooth or with short and scanty hair. Sternum smooth to the naked eye, or with a little scattered pitting.

Chelipeds equal; the upper edge of the merus sharply, the upper edge of the hand and finger strongly but more bluntly, crested; the upper outer surface of the hand with some scale-like roughening.

The outer surface of the legs is hardly pitted; the claw, in all the legs, is hairy, and there is a little tuft of hair near the far end of the lower edge of the propodite, but all the other joints are generally free of hair.

Colours in spirits, pinkish ochre, fingers blackish brown, with whitish tip and teeth.

30 specimens from Mergui, the Andamans, Ceylon and Singapore.

21. *Atergatis dilatatus*, De Haan, A. Milne Edwards.

Atergatis dilatatus, De Haan, Faun. Jap. Crust. p. 46, pl. xiv. fig. 2: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 238, and Nouv. Archiv. du Mus. IX. 1873, p. 183, pl. v. fig. 6: E. Nauck, Zeits. Wiss. Zool. XXXIV. 1880, p. 57, pl. i. figs. 19–21 (*gastric teeth*): F. Müller, Verh. Ges. Basel, VIII. 1886, p. 474: Henderson, Trans. Linn. Soc. Zool. (2) V. 1893, p. 353.

Closely resembles *A. integerrimus*, but easily recognized by the following constant differences:—

(1) the carapace is even broader, and has a sharper edge:

(2) the surface of the carapace is much more closely and extensively

pitted, no part being free from pitting except a small area in the mid-gastric region: the outer surface of the chelipeds and legs also is quite rough, from pitting:

(3) the creases that serve to show the cardiac region are much larger and deeper:

(4) the crest that bounds the endostome in front is higher:

(5) the external maxillipeds are closely covered, like a door-mat, with long thick bristles; and remarkable comb-like tufts of long stiff bristles are found along the front border of the ischium of the chelipeds and along the lower border of the ischium and merus of all the legs:

(6) the surface of the sternum is closely covered with confluent granules visible to the naked eye.

All these differences are to be noted in a large male with a carapace 119 millim. broad from Ceylon, in a medium-sized male (70 millim. broad) from the Andamans, and in two small females (59 and 44 millim. respectively) from widely different parts of the Andaman group—these four specimens being in the Indian Museum collection.

22. *Atergatis roseus* (Rüppell).

Carpilius roseus and *marginatus* Rüppell, 24 Krabben roth. Meer. p. 13, pl. iii. fig. 3 and pl. vi. fig. 7; p. 15, pl. iii. fig. 4.

Cancer roseus and *marginatus*, Milne Edwards Hist. Nat. Crust. I. 374, 375.

Atergatis roseus and *marginatus*, De Haan, Faun. Japon. Crust. p. 17 (names only):

Atergatis roseus, Heller SB. AK. Wien, XLIII. 1861, p. 309: A Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 239: Kossmann, Reise roth. Meer. Crust. p. 19: Richters in Möbius Meeresf. Maurit. p. 145: Haswell, Cat. Austr. Crust. p. 42: Cano, Boll. Soc. Nat. Nap. III. 1889, p. 189: Ortmann, Zool. Jahrb., Syst., VII. 1894, p. 461.

Atergatis marginatus, Krauss, Sudafr. Crust. p. 28: Dana U. S. Expl. Exp. Crust. pt. I. p. 158: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 240.

Atergatis laevigatus, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 241, pl. xv. figs. 4-4*a*: Henderson. Trans. Linn. Soc. Zool. (2) V. 1893, p. 352.

Atergatis scrobiculatus, Heller, Abhand. zool.-bot. Ges. Wien, XI. 1861, p. 5, and SB. AK. Wien, XLIII. 1861, p. 310: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 242.

Carapace of much the same proportions as *A. integerrimus*, but with a perfectly smooth dull surface; no indication whatever of regions; the crest of the antero-lateral borders blunt and ending smoothly, without any ridge or tooth, at the lateral epibranchial angle.

Front, orbits, external maxillipeds and legs as in *A. integerrimus*. Fingers fluted, but upper edge of hand rounded, not crested.

Colours in spirit, brownish yellow, fingers blackish brown with whitish teeth and tips.

22 specimens from Karáchi, and Madras coast.

23. *Atergatis floridus*, (Rumph).

Cancer floridus, Rumph, Amboinsch. Raritcitk. p. 16, pl. viii. fig. 5: Linnæus, Syst. Nat. (xii) p. 1041.

Cancer ocyroe, Herbst, Krabben, III. ii. 20, pl. liv. fig. 2: Milne Edw. Hist. Nat. Crust. I. 375.

Atergatis floridus, De Haan, Faun. Jap. Crust. p. 46: Krauss, Sudafr. Crust. p. 27: Dana, U. S. Expl. Exp. Crust. pt. I. p. 159, pl. vii. fig. 4: Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 32: Heller, Novara Crust. p. 8: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 243; and IX. 1873, p. 186: Targioni Tozzetti, Magenta Crost. p. 24: Miers, P. Z. S. 1877, p. 133, and Ann. Mag. Nat. Hist. (5) V. 1880, p. 231, and Zool. H. M. S. Alert, pp. 182, 207, and Challenger Brachyura, p. 112: Haswell, Cat. Austral. Crust. p. 41: F. Muller, Verh. Ges. Basel VIII. 1886, p. 474: de Man, Arch. fur Naturges. LIII. 1887, i. 245, and Journ. Linn. Soc. Zool., XXII. 1888, p. 24, and Weber's Zool. Ergeb. Niederl. Ost.-Ind. II. 1892, p. 277: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1890, p. 109: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 352: Ortmann, Zool. Jahrb. Syst. VII. 1894, p. 460, and in Semon's Forschungsr. (Jena. Denkschr. VIII) Crust. p. 51.

Carapace, length about $\frac{7}{10}$ breadth; its surface of perfectly smooth texture, but rendered lumpy by broad shallow depressions that faintly define and subdivide the regions; the crest of the antero-lateral border is sharp and ends at a very distinct tubercle at the lateral epibranchial angle.

The front forms with the antero-lateral borders a semicircle. The orbits are rather large, their width being more than one-third that of the front.

External maxillipeds free from hair on the surface: the sternum and the surface of all parts of the appendages except the hands (which have some rough reticulations on the outer surface) are smooth.

Chelipeds equal, the upper edge of the merus and hand strongly and sharply carinate; the fingers fluted as usual. Legs with crested edges to the long joints, as in *A. integerrimus*.

Colours in spirit, yellow; carapace covered with symmetrically disposed brown spots and confluent blotches, chelipeds and legs with a few faint brown spots, fingers blackish with whitish teeth and tips.

86 specimens from the Andamans, Mergui, Ceylon, Laccadives and Karáchi.

24. *Atergatis* sp.

There is, in the Indian Museum, a little specimen of an *Atergatis*, which may perhaps be the *A. asperimanus* insufficiently characterized by White in the P. Z. S. 1847, p. 224 and in the Annals and Magazine of Natural History, 1848, Vol. II. p. 285, as follows :—

"Carapace with its latero-anterior sides with a cutting edge, part

"of carapace behind this punctate; the rest of the surface almost quite "smooth with three or four impressed lines in front.

"Hands rugose, especially above; fingers, both movable and fixed, "deeply channelled.

"Pale yellowish red; feet darker; fingers pale horn-coloured.

"Philippines."

Our little specimen, from off Ceylon, 34 fms., agrees with this description; but the "impressed lines," which define the gastro-cardiac region, are so faint as to be only just visible.

It has the crested legs of *Atergatis*.

Lophactæa, A. Milne Edwards.

Lophactæa, A. Milne Edwards, Ann. Sci. Nat. Zool. (4) XVIII. 1862, p. 43; and Nouv. Archiv. du Mus. I. 1865, p. 245, and IX. 1873, p. 187.

Lophactæa, Miers, Challenger Brachyura, p. 113.

"The Lophactæas are distinguished from *Atergatis* by their narrower and always deeply lobulated carapace."

Carapace moderately broad, convex in both directions, with the regions generally well delimited and subdivided into lobes, and the surface generally (not always) granular; the antero-lateral borders have an independent crest-like edge, generally thin and sharp and distantly fissured; the postero-lateral borders are rather concave.

Front a little deflexed, about a fourth the greatest breadth of the carapace in extent, grooved and emarginate in the middle line, but not distinctly bilobed. Orbits large, the three suture lines near the outer angle distinct. Eyes on short thick stalks.

Antennules folding nearly transversely, inter-antennulary septum broad. Basal joint of antennæ short, touching the front only; the flagellum lodged in the orbital hiatus. Merus of the external maxillipeds with the front edge a little oblique.

Chelipeds equal in both sexes; fingers not hollowed at tip. Long joints of legs with sharp crest-like upper borders much as in *Atergatis*.

Abdomen of the male five-jointed, the 3rd–5th somites being fused.

Small crabs.

Lophactæa, except that the fingers are pointed instead of broad and hollowed-out at tip, appears to me to be as closely as possible related to *Zozymus*. In *Lophactæa*, besides the difference in the fingers, the carapace is more convex and less cut up into lobules, and its surface is generally granular.

Key to the Indian species of Lophactæa.

I. Regions and sub-regions of the carapace very distinct; postero-lateral borders slightly concave, but not definitely marked off from the rest of the carapace :—
  i. Surface of carapace more or less covered with pearly granules :—
    1. Hand sharply crested along upper border :—
      a. Pearly granules over the whole of the carapace, and over the outer surface of the carpus and propus of the walking legs ..... *L. cristata.*
      b. Pearly granules absent from part of the post-cardiac region and from the walking legs ..... *L. semigranosa.*
    2. Upper border of hand not crested :—
      a. Crest-like margin of antero-lateral border of carapace simply cleft ..... *L. granulosa.*
      [b. Crest-like margin of carapace deeply eroded ..... *L. fissa.*]
  ii. Surface of carapace and of appendages perfectly smooth ..... *L. anaglypta.*

II. Regions and sub-regions of the carapace so faint as to be visible only on close inspection; postero-lateral borders remarkably concave, and defined by a row of sharp beads or teeth ..... *L. corallina.*

25. *Lophactæa cristata*, A. Milne Edwards.

Lophactæa cristata, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 246, pl. xvi. fig. 1: de Man, Notes Leyden Mus. III. 1881, p. 95, and Arch. fur Naturges. LIII. 1887. i. p. 246: F. Müller, Verh. Ges. Basel VIII. p. 474: Ortmann, Semon's Forschungsr. (Jena. Denkschr. VIII.), Crustacea, p. 50.

Carapace symmetrically intersected by broad smooth rather deep furrows, which delimit and subdivide the regions, the strongly marked convexities of the regions and subregions being closely studded with pearl-like granules: similar, but larger, granules occur in linear series on the outer surface of the wrist and hand; and similar, but smaller, granules are found on the outer surface of the corresponding segments of the legs. The under surface of the carapace is finely granular and more or less furred.

The whole supra-orbital border is tumid, with a row of pearly granules.

The crest of the antero-lateral border is divided into four broad segments by three narrow fissures.

Upper border of the arm and hand strongly and sharply crested, fingers fluted.

Legs with a few scattered bristles on most of the joints, and with the claws covered with short fur: the upper edge of the merus carpus and propus is strongly crested, as are the lower edges of the merus.

Colours in spirit, yellowish or greenish brown, fingers blackish brown.

One specimen from the Madras coast is in the Indian Museum collection. (There are other specimens from Mauritius).

26. *Lophactæa semigranosa*, (Heller) A. M. Edw.

Atergatis semigranosus, Heller, Abhand. zool.-bot. Ges. Wien, XI. 1861, p. 6, and SB. AK. Wien, XLIII. 1861, p. 313.

Lophactæa semigranosa, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 248: Miers, Zool. H. M. S. Alert, pp. 517 and 527: de Man, Archiv. fur Naturges. LIII. 1887, i. p. 246, pl. viii. fig. 4: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 355: Ortmann, Zool. Jahrb. Syst. VII. 1894, p. 459.

Closely resembles *L. cristata* Heller, from which it is, perhaps, not specifically distinct. It differs chiefly in having the pearly granules not only less sharply sculptured and less closely studded, but quite absent from a part of the post-cardiac region, from the supra-orbital border, and from the outer surface of the walking legs. Its appearance, in short, is that of *L. cristata* with the sculpturing worn.

7 specimens from the Andamans, Mergui, and Ceylon.

27. *Lophactæa granulosa*, Rüppell, A. M. Edw.

Xantho granulosus, Rüppell, 24 Krabben roth. Meer. p. 24, pl. v. fig. 3.

Aegle granulosus, De Haan. Faun. Japon. Crust. p. 17 (name only).

Cancer limbatus, Edw., Hist. Nat. Crust. I. 377, pl. xvi. fig. 14.

Atergatis limbatus, Dana, U. S. Expl. Exp. Crust. pt. I. p. 157: Heller, Novara Crust, p. 8: Streets, Bull. U. S. Nat. Mus. VII. 1877, p. 105.

Lophactæa granulosa, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 247, and IX. 1873, p. 187: Brocchi, Ann. Sci. Nat. (6) II. 1875. Art. 2, p. 71, pl. xvii. fig. 138 (male appendages): Hilgendorf, MB. AK. Berl. 1878, p. 787: de Man, Notes Leyden Mus. III. 1881, p. 95, and Archiv. fur Naturges. LIII. 1887, i. p. 246: Haswell, Cat. Austr. Crust. p. 43: Miers, Challenger Brachyura, p. 114: Cano, Boll. Soc. Nat. Nap. III. 1889, p. 190: J. R. Henderson, Tr. Linn. Soc., Zool., (2) V. 1893, p. 354: Ortmann, Zool. Jahrb. Syst. &c. VII. 1894, p. 459.

Closely resembles the two preceding species, from which it differs most conspicuously in having no crest to the upper border of the hand: the granulation of the carapace is not nearly so sharp-cut and pearl-like. In the Indian Museum are specimens from Australia and Samoa, but none from India. It is included in the Indian Fauna on the authority of Dr. J. R. Henderson.

28. *Lophactæa anaglypta* (Heller), A. M. Edw.

Atergatis anaglyptus, Heller, Abhandl. zool.-bot. Ges. Wien, 1861, p. 6, and SB. Ak. Wien, XLIII. 1861, p. 312, pl. ii. figs. 11, 12.

Lophactæa anaglypta, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 251, and IX. 1873, p. 190: Ortmann, Zool. Jahrb. Syst. VII. 1893, p. 459: de Man, Zool. Jahrb. Syst. VIII. 1895, p. 498.

Carapace with the regions separated and symmetrically subdivided by broad but well cut grooves, but with the texture of the surface—as of the appendages—perfectly smooth, the only roughness of any sort being a few lines and impressions on the outer surface of the hand.

Crest of the antero-lateral border narrow, divided into four lobes by three insignificant notches or dents. Supra-orbital border not tumid throughout its extent. Crest of the upper border of the hand low and rather blunt: crests of the leg-joints distinct but rather low.

One specimen from Galle, one from the Persian Gulf.

29. *Lophactæa corallina*, n. sp.

Carapace broadly semioval, with remarkably concave postero-lateral borders, the crest of the antero-lateral border very thin and sharp and a little angular, the postero-lateral and posterior borders bounded by a line of sharp beads or teeth. Front obliquely deflexed, with a sharp broadly-bilobed edge.

The whole surface of the carapace is very finely granular, but the division and subdivision of the regions, though undoubtedly existent, is hardly perceptible, so faint are the inter-regional depressions: some long stiff hairs occur here and there.

The under surface of the carapace and the surface of the external maxillipeds and male sternum is finely granular.

The chelipeds and legs are rather hairy and are beautifully sculptured: at the distal end of the arm is a petal-like crest, and three series of larger petaloid granules or crests traverse the outer surface of the wrist longitudinally: the outer surface of the hand is closely granular, the granules becoming linear in arrangement and laminar in form towards the upper part.

The outer surfaces of the legs are covered with granules and teeth, two crests on the carpopodites of all being very distinct.

Colours in spirit, yellowish or whitish with a pink blush: fingers with a black cross-band at the base.

Length of carapace 6 millim., breadth 9 millim.

A male and female from off Ceylon, 34 fms.

30. *Lophactæa fissa*, Henderson.

Lophactæa fissa, Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 355, pl. xxxvi. figs. 8, 8a.

It appears to me possible that this, which seems to be founded on a single specimen, is only an individual variation of *L. granulosa*.

Lophactæa sp.

From Inglis I. (Andamans) a single small specimen, not agreeing with any described species, which in the circumstances I forbear to describe.

It belongs to the *L. cristata* and *semigranosa* group, but has the inter-regional furrows much shallower and less distinct, and the pearly granules absent from all but the front part of the gastric region and the lateral parts of the epibranchial region: those on the chelipeds are also much fewer and more scattered. The legs are very hairy.

Zozymus, Leach.

Zozymus, Leach, [Dict. Sci. Nat. XII. p. 75. Miers]: and in Desmarest, Consid. Gen. Crust. p. 105.

Zozymus, Milne Edwards, Hist. Nat. Crust. I. 383 (part).

Zozymus, Dana, U. S. Expl. Exp., Crust. pt. I. p. 189.

Zozymus, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, p. 302.

Zozymus, Miers, Challenger Brachyura, p. 134.

Carapace moderately broad, moderately convex in both directions, with the regions well delimited and subdivided into numerous lobules, the surface of which is not usually granular.

The antero-lateral borders are sharp and crest-like, and are cut into lobes (usually four in number); the postero-lateral borders are straight and strongly convergent.

Front about a fourth the greatest breadth of the carapace, obliquely deflexed, grooved and emarginate in the middle line: orbits large, the tumid edge with the three suture lines near the outer angle distinct; eyes on short thick stalks.

Antennules folding nearly transversely, inter-antennulary septum broad. Basal joint of antennæ short, touching the front only at the (produced) antero-internal angle; the flagellum short (less than the major diameter of the orbit), lodged in the orbital hiatus.

Merus of the external maxillipeds with the front edge a little oblique.

Chelipeds equal in both sexes; fingers with broad hollowed-out

tips. Long joints of legs with sharp crest-like upper borders much as in *Atergatis.*

Abdomen of the male five-jointed, the 3rd–5th somites being fused.

Rather large crabs.

Key to the Indian species of Zozymus.

I. All parts of carapace rugose: inter-regional and inter-lobular furrows smooth and naked except, perhaps, near the margin of the carapace ... ... *Z. aeneus.*

II. Posterior third of carapace hardly at all rugose: inter-regional and inter-lobular furrows for the most part full of short close hair ... ... *Z. pilosus.*

31. *Zozymus aeneus*, (Linn.)

Cancer incomparibilis, Seba, Thesaurus III. 48, pl. xix. fig. 18.

Cancer aeneus, Linn., Mus. Lud. Ulr. p. 451, and Syst. Nat. (ed. xii) p. 1048.

Cancer floridus, Herbst, Krabben, I. ii. 132, 264, pl. iii. fig. 39, pl. xxi. fig. 120.

Cancer amphitrite, Herbst, Krabben, III. ii. 5, pl. liii. fig. 1.

Cancer aeneus and *floridus*, Fabricius, Ent. Syst. II. 455, 445, and Suppl. p. 335, 338.

Cancer aeneus, Latreille, Hist. Nat. Crust. V. 375: Lamarck, Hist. Nat. Anim. sans Verteb. V. 271: Desmarest, Consid. Gen. Crust. p. 104: [Quoy et Gaimard, Voy. Uranie, pl. lxxvi. fig. 1. Edw.].

Zozymus aeneus, Milne Edwards, Hist. Nat. Crust. I. 385.

Aegle aeneus, De Haan, Fann. Japon. Crust. p. 17.

Zozymus aeneus, Dana, U. S. Expl. Exp. Crust. pt. I. p. 192, pl. x. fig. 3: Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 32: Heller, SB. AK. Wien, XLIII. 1861, p. 326: A. Milne Edwards, in Maillard's l'ile Réunion, Annexe F. p. 4, and Nouv. Archiv. du Mus. IX. 1873, p. 207: Miers, Ann. Mag. Nat. Hist. (5) II. 1878, p. 407, and Phil. Trans. Vol. 168, 1879, p. 486, and Ann. Mag. Nat. Hist. (5) V. 1880, p. 234, and Challenger Brachyura, p. 134: Richters in Möbius Meeresf. Maurit. p. 146: Haswell, Cat. Austral. Crust. p. 58: F. Muller, Verh. Ges. Basel VIII. p. 474: de Man, Archiv. fur Naturges. LIII. 1887, i. p. 273: Cano, Boll. Soc. Nat. Napoli III. 1889, p. 199: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 359: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 458, and Semon's Forschungsr. (Jena. Denk. VIII) Crust. p. 50: Whitelegge, Mem. Austral. Mus. III. 1897, p. 131.

Carapace with the regions well delimited and very strongly rugose, the rugosities being small in the postero-lateral regions but everywhere smooth and polished, and everywhere symmetrical. The crest-like antero-lateral borders are 4-scalloped, the three anterior lobes being rounded and the fourth being dentiform.

The tumid orbital margins are marked by four suture lines. The front hardly projects beyond the level of the orbit.

The wrist has its outer surface made rugose by meandering furrows, one of which runs fore and aft, the others transversely. The

hand carries a blunt but well-marked crest along its upper border, below which the surface is rugose much as the wrist: the lower part of the outer surface of the hand is tuberculous, the tubercles tending to a linear arrangement. The fingers are fluted, bear strong molariform teeth and tufts of hair on their cutting edge, and have blunt-pointed, hollowed out (spoon-like) tips. The furrows of the wrist and hands, as well as those of the legs, are filled with close short fur.

The merus carpus and propus have the upper edge strongly carinate, the inner surface of each crest bearing a thick fringe of long somewhat silky hair: the dorsal surface of these joints is furrowed longitudinally, with many more or less plain transverse impressions also: the dactyli are hairy up to the claw.

In life the animal is beautifully spotted and ocellated with chocolate brown on a bluish-grey ground. In spirit the animal has a chinaware look and a dull yellowish-white colour, with darker yellow and dull brownish spots and markings.

In the Indian Museum are 30 specimens from the Andamans and Laccadives.

32. *Zozymus pilosus*, A. Milne Edwards.

Zozymus pilosus, A. Milne Edwards, Ann. Soc. Ent. France (4) VII. 1867, p. 271; and Nouv. Archiv. du Mus. IX. 1873, p. 208, pl. vii. fig. 2.

Carapace having the regions and lobules well defined in its anterior two-thirds only: the lobules have a flattened semi-imbricate look, wavy edges, and a rough or granular surface; and the grooves that separate them are filled with small short close-set bristles, especially along the anterior contours of the lobules.

All four lobes of the antero-lateral borders are rounded and not dentiform. The orbital margin is not very tumid and is marked by three suture lines. The front projects beyond the orbit.

The wrist and hand are closely nodular: the nodules (those on the hand especially) have a granular surface, and the grooves that separate them are full of short close hair: the upper edge of the hand is not crested. Fingers short, stout, blunt-pointed, hollowed at tip: they are strongly fluted, the ridges being beaded in their basal half.

The legs have the upper edge of the merus, carpus, and propodite strongly crested: the crest of the merus and carpus may be subserrate, and is always notched near the distal end. The dorsal surface of the carpus and propodite is grooved and nodular—the nodules having a flat, subimbricate look.

Colours in spirit—yellowish-white, with a faint bluish or purplish blush; the crest-like margin of the carapace lighter than other parts; fingers dark brown with white tips.

In the Indian Museum is a specimen from Port Blair Harbour (Andamans), and one from the Angrias Bank (Malabar Coast) in 15 fms.

Although the chelipeds and antero-lateral margins make this species easily recognizable from *Lophozozymus incisus* (Edw.) de Man, I am inclined to suspect that this is the young of *L. incisus*.

Lophozozymus, A. Milne Edwards.

Lophozozymus, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, p. 276; and Ann. Soc. Entom. France (4) VII. 1867, p. 272.

Lophozozymus, Miers, Challenger Brachyura, p. 114.

Differs from *Zozymus* in having (1) the crest of the antero-lateral border sharp-edged and (2) the fingers not spooned at tip. To avoid unnecessary disturbance of accepted nomenclature the name is here maintained as a subgenus of *Zozymus*.

Key to the Indian species of the subgenus Lophozozymus.

I. Front lobe of the antero-lateral border confluent and fused with the orbit: [size moderate or small]:—
   - Regions and lobules of carapace well defined; the lobules pitted or dented, the grooves between them hairy: chelipeds and legs shaggy ..... *L. incisus.*
   - i. Regions and lobules of carapace ill defined and faint: surface of carapace smooth and bare: legs with a few lank scattered hairs ... . *L. dodone.*

II. Front lobe of antero-lateral border separated from the orbit by a gap; carapace smooth, the regions (but not the subregions) fairly well defined: [size large]:—
   - i. Hands smooth and bare ... . *L. octodentatus.*
   - ii. Outer surface of hand granular and hairy ..... *L. cristatus.*

33. *Lophozozymus octodentatus*, Edw.

Cancer saxatilis, Rumph, Amboinsch. Rariteitk. p. 9, pl. v. fig. M.

Cancer rumphii, Guérin, Icon. Règne An. pl. ii. fig. 1, (*nec* Herbst.)

Xantho octodentatus, Milne Edwards, Hist. Nat. Crust. 1. 398: Lucas in Jacquinot's Voyage Astrolabe, Zool., Crust., p. 23, pl. ix. fig. 1: E. Nauck, Zeits. Zool. XXXIV. 1880, p. 51 (*gastric teeth*): Haswell, Cat. Austral. Crust. p. 58.

Lophozozymus ephelitieus Linn., Miers, Ann. Mag. Nat. Hist. (5) V. 1880, p. 231, and Zool. H. M. S. Alert, pp. 182, 207: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1890, p. 109: de Man, Zool. Jahrb., Syst., VIII. 1895, p. 518.

Carapace perfectly smooth and polished; the gastric region delimited on all sides and partly subdivided, and the hepatic separated from the branchial regions, by broad smooth shallow depressions. Underside of carapace hairy.

Front gently convex beyond the orbits, finely cleft in the middle line. Orbital border sharp, somewhat puckered by three sutures near the outer angle. The crest-like antero-lateral border is sharp and is cut into four teeth, of which the first is separated from the orbit by a gap, the third and fourth are keeled, and the third strongly accuminate.

Chelipeds equal, their surface perfectly smooth: the upper edge of the arm is strongly crested, the crest at its distal end being foliaceously expanded and deeply cleft; wrist with a strong double tubercle at its inner angle; upper edge of hand crested, but rather coarsely; fingers large, long, pointed.

Legs smooth: upper edge of merus carpus and propodite strongly crested, the inner face of the crest with tufts of long hair; dactylus furred up to the claw.

Colours in spirit: a bright orange-red network on a dull yellow-ochre ground, fingers black.

In the Indian Museum are two specimens from Singapore.

34. *Lophozozymus cristatus*, A. Milne Edwards.

Lophozozymus cristatus, A. Milne Edwards, Ann. Soc. Entom. France (4) VII. 1867, p. 272, and Nouv. Archiv. du Mus. IX. 1873, p. 203, pl. vi. fig. 4: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 361: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 456.

This species appears to differ from *L. octodentatus* only in having the first lobe or tooth of the antero-lateral margin acute instead of rounded and the outer surface of the hands granular and hairy.

There are no specimens in the Indian Museum; and the species—if it be distinct—is included in the Indian fauna on the authority of Dr. J. R. Henderson.

35. *Lophozozymus incisus* (Edw.) Haswell, de Man.

Xantho incisus, Milne Edwards, Hist. Nat. Crust. I. 397: Hess, Archiv. f. Nat. XXXI. 1865, i. p. 133: F. Muller, Verh. Ges. Basel, VIII. 1886, p. 474.

? Xantho superbus, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 74, and U. S. Expl. Exp. Crust. pt. I. p. 167, pl. viii. figs. 5*a-b*, (*nec* A. Milne Edwards) de Man.

Lophozozymus incisus, Haswell, Cat. Austral. Crust. p. 58: de Man, Archiv. für Naturges. LIII. 1887, i. p. 268, pl. x. fig. 1: Thallwitz, Abh. u. Ber. Mus. Dresden, 1890-91, no. 3, p. 48.

Carapace with the regions well delimited, and having the branchial regions (and to a less extent, the gastric region also) subdivided into lobules which have their anterior margins sinuous and sharply undermined so as to have a semi-imbricate look. The surface of these lobules is a little dented and uneven, and the grooves that separate them are full of hair.

The crest-like antero-lateral border is cut into 4 lobes, of which the first is confluent with the orbit, and the last two are pointed and strongly keeled. Front little convex beyond the orbits, distinctly bilobed. Orbital border sharp, salient, with three suture-lines.

Chelipeds equal: upper edge of arm with a strong crest, which is foliaceously expanded and cleft at its distal end; upper border of hand and dactylus crested; outer surface of wrist and hand covered with large granules, which stand in more or less distinct linear series and are a good deal concealed by long shaggy hairs. Fingers stout, of good length, pointed.

Legs with the upper edge of merus carpus and propodite strongly crested and shaggy, and the surfaces of the dactylus and of most of the propodite shaggy.

Colours in spirit yellow with many orange-red patches; fingers dark brown.

In the Indian Museum are 2 specimens, one from the Orissa Coast, 15–35 fms., the other from the Angrias Bank (Malabar Sea) 15 fms.

36. *Lophozozymus dodone* (Herbst) Hilgendorf, de Man.

Cancer dodone, Herbst, Krabben, III. ii. 37, pl. lii. fig. 5.

Lophozozymus dodone, Hilgendorf, MB. Ak. Berl. 1878, p. 789: Miers, Zool. H. M. S. Alert, pp. 517, 527: de Man, Archiv. für Naturges. LIII. 1887, i. p. 270, pl. x. figs. 2, 2a: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 361: Ortmann, Zool. Jahrb., Syst., VII. 1893–94, p. 457.

Xantho radiatus (? *C. dodone* Herbst) Milne Edwards, Hist. Nat. Crust. I. 398: A. Milne Edwards, in Maillard's l'île Réunion, Annexe F. p. 4.

Atergatis lateralis, White P. Z. S. 1847, p. 225; Ann. Mag. Nat. Hist. (2) II. 1848, p. 285; and Samarang Crust. p. 39, pl. viii. fig. 1.

Xantho lamelligera, White, *ll.* cc. p. 225, p. 285, p. 40 (*fide* A. Milne Edwards *infra*).

Xantho nitidus, Dana, Proc. Ac. Nat. Sci. Phila. 1852, p. 74, and U. S. Expl. Exp. Crust. pt. I. p. 166, pl. viii. figs. 4*a-b*.

Atergatis elegans, Heller, Novara Crust. p. 7, pl. i. fig. 4 (*fide* de Man).

Lophozozymus radiatus, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 206.

Carapace smooth with the regions very faintly indicated and with very few and faint traces of lobulation: sometimes a few lank hairs on the antero-lateral border.

The crest-like antero-lateral border is trenchant and somewhat cockled, and is cut into 4 shallow scallops, the last two of which are acuminate and carinate, and the first of which is confluent with the orbit. Front slightly convex beyond the orbits and a little emarginate in the middle line. Orbital border sharp with the suture lines faint and indistinct.

Chelipeds equal; outer surface of wrist and hand finely granular or rugose under the lens; upper edge of arm crested but not foliaceously expanded; both upper and lower edge of hand crested. Fingers very short and stumpy, pointed.

Legs smooth: upper edge of merus carpus and propodite crested and having a few scattered hairs; also a few scattered hairs on the surface and lower edge of propodites.

Colours in spirit yellow, with diffused orange-red patches; fingers brown, white at tip.

In the Indian Museum are three specimens from the Andamans.

Alliance III. *Euxanthoida.*

Euxanthus. Hypocoelus.

Euxanthus, Dana.

Euxanthus, Dana, Silliman's Amer. Journ. Sci. and Art. (2) XII. 1851, p. 125; Proc. Ac. Nat. Sci. Phila. 1852, p. 75; and U. S. Expl. Exp. Crust. pt. I. p. 173.

Melissa, Strahl, Archiv. fur Naturges. XXVII. 1861, i. p. 101.

Euxanthus, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 289.

Carapace very broad, strongly convex in both directions, with the regions well delimited and subdivided into convex lobules.

The antero-lateral borders are sharp and somewhat irregularly scalloped, the lobes often subpyramidal or dentiform: they do not terminate at the orbit, but are prolonged, beneath the orbit, to the buccal cavern. The postero-lateral borders are very short and very concave.

The front is of no great breadth (about a fifth the greatest breadth of the carapace), bilobed, and prominent. The supra-orbital border and the inner angle of the lower border of the orbit are tumid, and the rest of the orbital margin is very low and forms an unbroken curve, with only one closed suture line. The eyes have short thick stalks.

The antennules fold nearly transversely. The basal antennal joint is prolonged right into the orbit, and the short flagellum is therefore placed inside the orbit. The outer border of the merus of the external maxillipeds is oblique.

The chelipeds are equal in both sexes, and are relatively small and light. The fingers are rather long-pointed, and have the tip slightly but distinctly hollowed out.

Abdomen of the male five-jointed, the 3rd–5th somites being fused.

Crabs of medium size, easily recognized by the peculiar form of the basal joint of the antennæ and the course of the antero-lateral margin of the carapace.

Key to the Indian species of Euxanthus.

1. Lobules of carapace almost smooth; outer angle of orbit not marked by a denticle ..... *E. melissa.*
2. Lobules of carapace rough; outer angle of orbit marked by a denticle ..... *E. sculptilis.*

37. *Euxanthus melissa*, (Herbst).

Cancer exsculptus, Herbst, Krabben, I. ii. 265, pl. xxi. fig. 121.

Cancer melissa, Herbst, Krabben, III. ii. 7, pl. li. fig. 1.

Euxanthus melissa, Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 33: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 293: Targioni Tozzetti, Magenta Crust. p. 27, pl. iii. figs. 1–7: F. Muller, Verh. Ges. Basel, VIII. p. 474: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 359: Ortmann, Zool. Jahrb. Syst. VII. 1893–94, p. 466, pl. xvii. fig. 9.

Cancer mamillatus, Milne Edwards, Hist. Nat. Crust. I. 376.

Melissa mamillata, Strahl, Archiv. für Naturges. XXVII. 1861, i. p. 103.

Euxanthus mamillatus, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 292, pl. xv. figs. 2–2b; and IX. 1873, p. 196: Haswell, Cat. Austral. Crust. p. 48: de Man, Journ. Linn. Soc., Zool., XXII. 1887–88, p. 30.

Euxanthus nitidus, Dana, Proc. Ac. Nat. Sci. Phila. 1852, p. 75; U. S. Expl. Exp., Crust. pt. I. p. 174, pl. viii. figs. 9*a-b*. (young).

Melissa nitida, Strahl, Archiv. für Naturges. XXVII. 1861, i. p. 103.

Cancer exsculptus, Hoffmann in Pollen and Van Dam, Faun. Madagasc. Crust. p. 38.

?Euxanthus exsculptus var. *rugosus*, Miers, Zool. H. M. S. Alert, pp. 517, 527 (? young.)

The lobules of the carapace are extremely convex, and though some of them may be a little dimpled, especially in the young, they are commonly smooth.

The antero-lateral borders are cut into five teeth, but there is often a tubercle — which may be incompletely double — between the 4th and 5th teeth; between the 3rd and 5th teeth the margin is finely granular.

The curve of the orbit is unbroken by any denticle at the outer angle, and is smooth, not granular.

The outer surfaces of the wrist and hand, as of the corresponding joints of the legs, are nodular, the nodules and the hollows between them being smooth: on the lower outer surface of the hand are two longitudinal wrinkles which also have a smooth surface. The fingers have their surfaces smooth, and their cutting edges strongly toothed, with the tip distinctly hollowed out.

Colours of good spirit specimens: stone grey or yellowish, with numerous tiny chocolate-brown or purplish specks, and some large blotches of the same colour on the gastric, hepatic and branchial regions. These markings have faded in spirit specimens that have been preserved

over ten years. Fingers blackish brown, this colouration extending along the lower border and inner surface of hand.

In the Indian Museum are 17 specimens from the Andamans, Mergui, and Ceylon (besides a specimen from Samoa).

38. *Euxanthus sculptilis*, Dana.

Euxanthus sculptilis, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 75, and U. S. Expl. Exp. Crust. pt. I. p. 173, pl. viii. figs. 8*a-d*: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 291: Ortmann, Zool. Jahrbuch., Syst., VII. 1893-94, p. 466.

Cancer huonii, Lucas in Jacquinot's Voy. Astrolabe, Crust. p. 16, pl. iv. fig. 1.

Euxanthus huonii, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 290, pl. xv. figs. 1–1*c*: Haswell, Cat. Austral. Crust. p. 47: Miers, Zool. H. M. S. Alert, pp. 182, 204: de Man, Archiv. für Naturges. LIII. 1887, i. p. 263.

Lobules of carapace moderately convex, their surface so much wrinkled and dented transversely as to give them an almost scaly look.

Antero-lateral borders cut into six teeth, the edge between all the teeth being granular.

The orbital margin is granular, and there is a denticle to mark the outer angle of the orbit.

The nodules of the wrists and hands—and, to a less strongly marked extent, those of the corresponding joints of the legs—are granular, as are the hollows between the nodules; and the two wrinkles along the lower outer surface of the hand are granular. The fingers resemble those of *E. melissa*, except that their surfaces are strongly granular.

Colours of well-preserved spirit specimens: yellowish with purplish spots and blotches, many of which are confluent; fingers and hand coloured as in *E. melissa*.

In the Indian Museum are 3 specimens from Persian Gulf and Andamans, (besides one from Samoa).

Hypocœlus, Heller.

Hypocœlus, Heller, Abh. zool-bot. Ges. Wien, 1861, p. 7; and SB. AK. Wien, XLIII. 1861, p. 319.

Hypocœlus, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865. p. 295.

Differs from *Euxanthus* chiefly in having a large oval or reniform cavity excavated in either pterygostomian region.

It is not represented in the Indian Museum.

39. *Hypocœlus rugosus*, Henderson.

Hypocœlus rugosus, Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 358, pl. xxxvi. figs. 9–11.

Alliance IV. *Xanthoida.*

Xantho.	Etisus.	Orphnoxanthus.
Leptodius.	Etisodes.	
Medæus.		
Cycloxanthus.		
Hoploxanthus.		

Xantho, Leach.

Xantho, Leach, Malac. Pod. Britt. pl. xi and text, 1815; and Trans. Linn. Soc. XI. 1815, p. 320.

Xantho, Desmarest, Consid. Gen. Crust., p. 104.

Xantho, (part) and *Eudora* (part), De Haan, Faun. Japon. Crust. pp. 18 and 22.

Xantho, (part) Milne Edwards, Hist. Nat. Crust. I. 387.

Xantho, (part) Dana, U. S. Expl, Exp., Crust. pt. I. p. 166.

Xantho, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, pp. 275 and 294 and Miss. Sci. Mex., Crust. p. 251.

Xantho, Miers, Challenger Brachyura, p. 124.

[Type Xantho floridus, Leach.]

Carapace broad, moderately convex anteriorly, flat in the posterior half; the regions generally well delimited and fairly well lobulated in the anterior two-thirds, but not posteriorly.

Antero-lateral borders arched, usually cut into four teeth or lobes: postero-lateral borders moderately convergent, not concave.

Extent of fronto-orbital border half, or less than half, the greatest width of the carapace: front about a fourth the greatest breadth of the carapace.

Front little deflexed, rather prominent, usually sublaminar, notched in the middle line, usually separated from the supra-orbital margin by a notch or groove.

Orbital margin with two (often indistinct) suture lines above and one (more distinct) just below the outer angle: usually a prominent tooth at the inner angle of the lower edge of the orbit. Eyes on short thick stalks.

Basal antennal joint short, meeting the front at the inner angle; the flagellum, which is about as long as the orbit, lodged in the orbital hiatus.

Anterior edge of merus of external maxillipeds nearly transverse, with commonly a small tooth near the antero-internal angle.

Chelipeds either unequal in both sexes, or less commonly equal in both sexes (*Xantho impressus*, *Xantho scaberrimus*); fingers pointed.

Legs subcylindrical, with the upper edges often sharp (crested in *Xantho scaberrimus.*)

Abdomen of male five-jointed, the 3rd–5th somites fused; (in *X. impressus* the sutures are so distinct that the abdomen may appear 7-jointed).

Key to the Indian species of the Genus Xantho.

I. Chelipeds equal, or almost equal, in both sexes:—
  i. *Legs crested*, the crest sharp, or serrate, or crenate: length of carapace a good deal more than two-thirds the greatest breadth: lobules of carapace covered with convex subsquamiform tubercles ..... *Xantho (Lophoxanthus) scaberrimus.*
  ii. Legs thick, sub-cylindrical, length of carapace less than two-thirds the greatest breadth: lobules of carapace smooth ..... *Xantho (Rudora) impressus.*

II. Chelipeds unequal in both sexes: length of carapace two-thirds, or a little more than two-thirds, the greatest breadth: the legs may have sharp, but never distinctly crested edges:—
  i. First two teeth of the antero-lateral margin faint, obsolescent; carapace and chelipeds smooth (non-granular)..... *Xantho bidentatus.*
  ii. Either the last three, or all four, teeth of the antero-lateral margin distinct; a large part of the carapace and of the exposed surfaces of the chelipeds wrinkled and granular ..... *Xantho distinguendus.*

40. *Xantho distinguendus*, De Haan.

Cancer (Xantho) distinguendus, De Haan, Faun. Japon. Crust. p. 48, pl. xiii. fig. 7: Heller, SB. Ak. Wien, XLIII. 1861, p. 323.

Chlorodius distinguendus, Stimpson, Proc. Ac. Nat. Sci. Phila., 1858, p. 34.

Xantho macgillivrayi, Miers, Zool. H. M. S. Alert, pp. 183, 211, pl. xx. fig. c.

Lophozozymus (Lophoxanthus) bellus, var. *leucomanus*, Miers, Challenger Brachyura, p. 115, pl. xi. fig. 1.

Medæus distinguendus, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 31: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 359.

Regions of carapace well delimited, fairly well divided into lobules: the anterior and lateral parts of the carapace are covered with granular transverse wrinkles which have almost a scaly look.

Front cleft into two rather prominent, square-cut, sub-laminar lobes. Antero-lateral margin cut into four sharply granular teeth, which may be all sharply acuminate, or the first may sometimes be rather indistinct.

Alliance IV. *Xanthoida.*

Xantho.
Leptodius.
Medæus.
Cycloxanthus.
Hoploxanthus.
Etisus.
Etisodes.
Orphnoxanthus.

Xantho, Leach.

Xantho, Leach, Malac. Pod. Britt. pl. xi and text, 1815; and Trans. Linn. Soc, XI. 1815, p. 320.

Xantho, Desmarest, Consid. Gen. Crust., p. 104.

Xantho, (part) and *Eudora* (part), De Haan, Faun. Japon. Crust. pp. 18 and 22.

Xantho, (part) Milne Edwards, Hist. Nat. Crust. I. 387.

Xantho, (part) Dana, U. S. Expl, Exp., Crust. pt. I. p. 166.

Xantho, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, pp. 275 and 294 and Miss. Sci. Mex., Crust. p. 251.

Xantho, Miers, Challenger Brachyura, p. 124.

[Type Xantho floridus, Leach.]

Carapace broad, moderately convex anteriorly, flat in the posterior half; the regions generally well delimited and fairly well lobulated in the anterior two-thirds, but not posteriorly.

Antero-lateral borders arched, usually cut into four teeth or lobes: postero-lateral borders moderately convergent, not concave.

Extent of fronto-orbital border half, or less than half, the greatest width of the carapace: front about a fourth the greatest breadth of the carapace.

Front little deflexed, rather prominent, usually sublaminar, notched in the middle line, usually separated from the supra-orbital margin by a notch or groove.

Orbital margin with two (often indistinct) suture lines above and one (more distinct) just below the outer angle: usually a prominent tooth at the inner angle of the lower edge of the orbit. Eyes on short thick stalks.

Basal antennal joint short, meeting the front at the inner angle; the flagellum, which is about as long as the orbit, lodged in the orbital hiatus.

Anterior edge of merus of external maxillipeds nearly transverse, with commonly a small tooth near the antero-internal angle.

Chelipeds either unequal in both sexes, or less commonly equal in both sexes (*Xantho impressus*, *Xantho scaberrimus*); fingers pointed.

Legs subcylindrical, with the upper edges often sharp (crested in *Xantho scaberrimus.*)

Abdomen of male five-jointed, the 3rd–5th somites fused; (in *X. impressus* the sutures are so distinct that the abdomen may appear 7-jointed).

Key to the Indian species of the Genus Xantho.

I. Chelipeds equal, or almost equal, in both sexes :—	
i. *Legs crested*, the crest sharp, or serrate, or crenate: length of carapace a good deal more than two-thirds the greatest breadth: lobules of carapace covered with convex subsquamiform tubercles	*Xantho (Lophoxanthus) scaberrimus.*
ii. Legs thick, sub-cylindrical, length of carapace less than two-thirds the greatest breadth: lobules of carapace smooth	*Xantho (Eudora) impressus.*
II. Chelipeds unequal in both sexes: length of carapace two-thirds, or a little more than two-thirds, the greatest breadth: the legs may have sharp, but never distinctly crested edges :—	
i. First two teeth of the antero-lateral margin faint, obsolescent; carapace and chelipeds smooth (non-granular).....	*Xantho bidentatus.*
ii. Either the last three, or all four, teeth of the antero-lateral margin distinct; a large part of the carapace and of the exposed surfaces of the chelipeds wrinkled and granular	*Xantho distinguendus.*

40. *Xantho distinguendus*, De Haan.

Cancer (Xantho) distinguendus, De Haan, Faun. Japon. Crust. p. 48, pl. xiii. fig. 7: Heller, SB. Ak. Wien, XLIII. 1861, p. 323.

Chlorodius distinguendus, Stimpson, Proc. Ac. Nat. Sci. Phila., 1858, p. 34.

Xantho macgillivrayi, Miers, Zool. H. M. S. Alert, pp. 183, 211, pl. xx. fig. c.

Lophozozymus (Lophoxanthus) bellus, var. *leucomanus*, Miers, Challenger Brachyura, p. 115, pl. xi. fig. 1.

Medæus distinguendus, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 31: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 359.

Regions of carapace well delimited, fairly well divided into lobules: the anterior and lateral parts of the carapace are covered with granular transverse wrinkles which have almost a scaly look.

Front cleft into two rather prominent, square-cut, sub-laminar lobes. Antero-lateral margin cut into four sharply granular teeth, which may be all sharply acuminate, or the first may sometimes be rather indistinct.

Sub-genus Lophoxanthus, A. Milne Edwards.

Lophoxanthus, A. Milne Edwards, Miss. Sci. Mex. Crust. p. 256.

Differs from typical *Xantho* (*Xantho floridus* etc.) chiefly in having at least the upper edge of the legs distinctly crested: the carapace, moreover, is longer and narrower.

43. *Xantho* (*Lophoxanthus*) *scaberrimus*, Walker.

Xantho scaberrimus, A. O. Walker. Journ. Linn. Soc., Zool., XX. 1886–90, pp. 109, 115, pl. vii. figs, 1–4.

Carapace about ⅔ as long as broad, moderately convex in the anterior two-thirds; regions and subregions strongly defined by broad deep smooth channels, convex, and covered with smooth well-defined tubercles that are pea-like in the posterior third, somewhat scale-like in the anterior two-thirds, and pointed along the antero-lateral border.

Fronto-orbital border less than half the width of the carapace: front two-lobed, the lobes having an oblique and slightly concave margin and a well-defined external angle.

Antero-lateral border four-lobed, the first lobe blunt and non-prominent, the other three prominent and acuminate, all four with the edges serrulate. Postero-lateral margin not concave, granular; posterior margin beaded.

The whole under surface of the carapace, and the surfaces of the external maxillipeds, male sternum and male abdomen, are closely covered with large granules.

Chelipeds equal, uniformly closely covered (except upper surface of arm and inner and outer surfaces of fingers) with sharpish tubercles, which are largest on the hand, where they fall into raised longitudinal parallel series, most marked on the lower part of the outer surface: fingers fluted in continuation of the ridges on the hand, the ridges of the dactylus being rough in their basal part. Two tubercles, the anterior of which is the larger, at the inner angle of the wrist: and two somewhat foliaceous excrescences terminating the crest-like upper edge of the arm.

First three pairs of legs with the edges of the merus (but especially the upper edge) sharply crested, the upper edge of the carpus and propodite strongly serrated, and the dorsal surface of the carpus and propodite furnished with squamiform granules in series parallel with this serrated crest. The last pair of legs resembles the others, except that the crest of the merus is serrated, and the dorsal surface of the merus is granular.

Colours in spirit uniform ashy white.

In the Indian Museum besides a specimen from Japan is one from off the Orissa coast, 11 fms.

Xantho (*Lophoxanthus*) *scaberrimus* var. *baccalipes.*

Differs from the type in the following particulars:—

(1) the characteristic tubercles have everywhere a worn appearance, especially in the middle of the carapace and on the chelipeds and the ischium of the external maxillipeds:

(2) the dorsal crest of the arm and of the meropodites of the legs have each become a row of berry-like teeth, and the serrated crest and granular ridges of the carpopodites and propodites of the legs have become merely low rough elevations.

In the Indian Museum are three large males from Ceylon: the largest has the carapace 47 millim. long and 61 millim. broad.

Xantho (*Lophoxanthus*) *scaberrimus* var. *cultripes.*

Differs from the type in the following particulars:—

(1) the characteristic tubercles are still more "worn," especially on the mesogastrium, and near the inner angle of the wrist, and near the base of the thumb, where they are almost worn away:

(2) the dorsal crest of the arm (with its foliaceous terminal lobes), and the crests of the merus carpus and propodite in all the legs, are greatly developed sharp and entire, and the raised rows of granules on the dorsal surfaces of the leg joints have almost disappeared.

In the Indian Museum is a single male from Singapore, with a carapace 50 millim. long and 64 broad.

Sub-genus Leptodius, A. Milne Edwards.

Leptodius, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, p. 284: Nouv. Archiv. du Mus. IX. 1873, p. 221: Miss. Sci. Mex., Crust. p. 267, *ubi synon.*

Leptodius, Miers, Challenger Brachyura, p. 136.

Leptodius (e.g. *Leptodius exaratus*) resembles *Xantho* (e.g. *Xantho floridanus*) in general form and proportions, but differs most conspicuously in having the fingers hollowed out "*en cuillère*" at tip. But this divergence is almost bridged by *Leptodius crassimanus*, in which the spooning of the fingers is indistinct.

Leptodius further differs from the type of *Xantho* (1) in the greater convergence of the postero-lateral borders, (2) in the often—but not always—more than four-lobed antero-lateral border, and (3) in the often more extensive contact of the basal antennal joint with the front.

Key to the Indian species of the sub-genus Leptodius.

I. Carpus (and sometimes the propodite also) of the four last pairs of legs strongly bicarinate dorsally—the crests enclosing a trough-like cavity ..... *L. cavipes.*

II. Carpus and propodite of last four pairs of legs normal:—

i. Four teeth (exclusive of the orbital angle) on the antero-lateral border: postero-lateral border not or hardly shorter than the chord of the antero-lateral border ..... *L. exaratus.*

ii. More than four teeth on the antero-lateral border: postero-lateral border distinctly shorter than the chord of the antero-lateral border:—

1. Front bilaminar, the lobes having a slightly concave edge: 5 teeth on the antero-lateral margin ..... *L. sanguineus.*

2. Front bilaminar, the lobes so deeply concave as to make the front almost quadridentate:—

a. Five teeth on the antero-lateral margin: finger-tips often rather indistinctly hollowed out:—

α. Carapace cut up into numerous strongly convex lobules: upper surface of wrist and hand strongly and sharply rugose and nodular..... *L. euglyptus.*

β. Lobules of carapace not very numerous, not very convex, smooth: upper surface of wrist and hand somewhat rough ... *L. crassimanus.*

b. Eight to ten irregular teeth on the antero-lateral margin ..... *L. nudipes.*

44. *Xantho* (*Leptodius*) *exaratus* (Edw.) A. M. Edw.

Chlorodius exaratus, Milne Edwards, Hist. Nat. Crust. I. 402; and in Cuvier Règne An. Crust. pl. xi. fig. 3: Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 79; and U. S. Expl. Exp. Crust. pt. I. p. 208: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 34.

Leptodius exaratus, A. Milne Edwards, Nouv. Archiv. du Mus. IV. 1868, p. 71; and IX. 1873, p. 222: Kossmann, Reise roth. Meer. Crust. p. 32, pl. ii. fig. 1–6: Hilgendorf MB. Ak. Berl. 1878, p. 790: Richters in Möbius Meeresf. Maurit. p. 148: Haswell, Cat. Austral. Crust. p. 60: Miers, Zool. H. M. S. Alert, pp. 183 and 214: de Man, Archiv. f. Naturges. LIII. 1887, i. p. 285, and Journ. Linn. Soc., Zool., XXII. 1887-88, p. 33; and in Weber's Zool. Ergebn. Niederl. Ost. Ind. II. 1892 p. 278, and Zool. Jahrb., Syst., VIII. 1894-95, p. 521: Cano, Boll. Soc. Nat. Napoli, III. 1889, p. 202: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 362; Whitelegge, Mem. Austral. Mus. III. 1897, p. 137.

Xantho affinis, De Haan, Faun. Japon. Crust. p. 48, pl. xiii. fig. 8: Krauss, Sudafr. Crust. p. 30.

Xantho lividus, De Haan, *O.c.*, *l.c.* fig. 6: Miers, Zool. H. M. S. Alert, pp. 183, 214.

Cancer inæqualis, Audouin and Savigny Descr. Egypte pl. v. fig. 7 (*fide* A. M. E.)

Xantho exaratus var. *typica*, Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 445: and in Semon's Forschungsr. (Jen. Denk. VIII) Crust. p. 50.

Carapace moderately broad, moderately convex in the anterior two-thirds, nearly flat in the posterior third, where also it is not areolated. Gastric region well-defined, convex, fairly well areolated anteriorly, the wings of the carapace on either side of it divided into about 5 low lobules, three of which follow the contour of the antero-lateral border. The surface of the carapace is non-granular, except sometimes in the young.

Front not very prominent, but projecting beyond the inner angle of the orbit, from which it is separated by a notch; bilaminar, the lobes cut square, but with a slightly concave margin.

Antero-lateral border cut into 4 acuminate teeth, not including the outer angle of the orbit, or a small denticle below it. Postero-lateral border equal in length to the chord of the antero-lateral border.

Side wall of carapace, edges of upper surface of arm, and edges of legs—but especially the upper edge of the meropodites—with a good deal of hair.

Chelipeds unequal in both sexes. Upper and outer surface of wrist more or less dimpled or wrinkled; a strong tubercle at inner angle of wrist. Hands usually smooth, but the upper surface has, very commonly, some low fine transverse or reticulating wrinkles. Fingers large, thick, more or less fluted, not strongly toothed, meeting at tip only (in the adult) where they are broadened and hollowed out.

Legs with merus subcylindrical and smooth, carpus and propus nearly smooth and sometimes very faintly grooved, dactylus granular and furred along both edges as far as the claw.

Abdomen of male five-jointed.

Colours in spirit: dirty yellow or dirty green, sometimes mottled; fingers black.

In the Indian Museum are more than 130 specimens, chiefly from the Andamans, Mergui, Karáchi, also from the Persian Gulf, Bombay, Ceylon, Akyab and Penang.

45. *Xantho* (*Leptodius*) *sanguineus* (Edw.) A. M. Edw.

Chlorodius sanguineus, Milne Edwards, Hist. Nat. Crust. I. 402: Dana Proc. Ac. Nat. Sci. Philad. 1852, p. 79, and U. S. Expl. Exp. Crust. pt. I. p. 207, pl. xi. figs. 11*a*—*d*: Heller, Novara Crust. p. 18: Streets, Bull. U. S. Nat. Mus. VII. 1877. p. 105.

Antero-lateral border cut into five conical teeth between which are granules or little denticles; postero-lateral borders strongly convergent, shorter than chords of antero-lateral borders.

Chelipeds unequal: upper and outer surfaces of wrist strongly wrinkled and pitted; upper surface of hand nodular, upper half or more of outer surface of hand longitudinally ridged and transversely wrinkled: fingers short, stout, hollowed (but not broadened) at tip.

Legs with carpus and propodite longitudinally ridged and grooved above — the carpus more distinctly so — and dactylus furred.

Sidewall of carapace, edges of upper surface of arm, and edges of legs — but especially upper edge of meropodites — hairy.

Colours in spirit: yellow, fingers and front lower corner of hand blackish brown.

Length of carapace 10·5 millim., breadth 16 millim.

In the Indian Museum are 45 specimens from Galle and 1 from Mergui (Marine Survey).

This species, though strongly resembling *nudipes* and *crassimanus*, is at once recognized by the sharp-cut Actæa-like sculpture of the carapace. It is possible that it may be the *Chlorodius eudorus* of Milne Edwards. It has the closest possible resemblance to the *Xantho quinquedentatus* of Krauss, Sudafr. Crust. p. 30, pl. i. fig. 3, but that species is described and figured as having sharp fingers.

49. *Xantho* (*Leptodius*) *cavipes* (Dana).

Chlorodius cavipes, Dana, Proc. Ac. Nat. Sci. Phila., 1852, p. 79; and U. S. Expl. Exp. Crust. pt. I. p. 212, pl. xii. figs. 1*a–b*: Stimpson, Proc. Ac. Nat. Sci. Phila., 1858, p. 34.

Leptodius cavipes, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 34.

Carapace convex in anterior two-thirds, flat behind. Gastric region convex, well delimited and areolated by fine smooth rather deep channels; wings of carapace divided into about five lobules by less deep-cut and less smooth channels: the whole carapace (except the channels) covered with miliary granules, which on the lateral lobes of the gastric region are arranged in lines that have an imbricate look.

Front bilaminar, the fore edge of the lobes thickened and granular. Antero-lateral border thickened and granular, cut into small irregular teeth — 8 or 9 in number — which fall into 4 sets. Undersurface of carapace with short fur.

Chelipeds unequal: upper and outer surface of wrist and hand wrinkled and granular, outer surface of hand covered with granules in more or less distinct lines: fingers little toothed, incurved, blunt-pointed and hollowed (but not broadened) at tip.

Legs rough, but not very hairy: upper edge of meropodites finely serrated, distally sharply notched: *upper surface of carpopodites with two high longitudinal crests enclosing a trough-like space*; the propodites are similarly sculptured, but the sculpture is a good deal concealed by fur: dactyli furred.

Colours in spirit: dirty yellow or dirty greenish, fingers nearly black in distal ¾ only.

In the Indian Museum are 4 specimens, from the Andamans, Mergui and Ceylon.

Medæus, Dana.

Medæus, Dana, Silliman's Amer. Journ. Sci. and Arts, (2) XII. 1851, p. 125; Proc. Ac. Nat. Sci. Philad. 1852, p. 76; U. S. Expl. Exp. Crust. pt. I. p. 181.

Medæus, A. Milne Edwards, Ann. Sci. Nat. Zool. (4) XX. 1863, p. 279; Miss. Sci. Mex. Crust. p. 249.

Medæus, Miers, Challenger Brachyura, p. 116.

Carapace not very broad, hexagonal, little convex, the regions well defined and well areolated.

Antero-lateral borders cut into teeth and *very distinctly continued beneath the orbits to the angles of the buccal cavern.*

Fronto-orbital border half, or a little more than half, the greatest breadth of the carapace.

Front about a fourth, or a little more, the greatest breadth of the carapace, horizontal, rather prominent, square-cut, notched in the middle line, separated from the supra-orbital margin by a notch.

Orbits, eyes, basal antennal joint and antennary flagellum as in *Xantho.*

Chelipeds either unequal or subequal, the wrists and hands commonly covered with large nodules, the fingers pointed.

The abdomen of the male consists of five pieces, the 3rd–5th somites being fused.

Medæus closely resembles *Xantho*, but is distinguished by the narrower carapace and by the relations of the antero-lateral border. In some species of *Xantho* (*e.g.*, *X. distinguendus*) the antero-lateral border is broken and eroded near the orbit, so that it may be imagined to be continued to the angle of the buccal cavern, but in *Medæus* there is no ambiguity whatever.

50. *Medæus nodosus*, A. M. Edw.

Medæus nodosus, A. Milne Edwards, Ann. Soc. Ent. France, (4) VII. 1867, p. 271; Nouv. Archiv. du Mus. IX. 1873, p. 212, pl. viii. fig. 2: Haswell, Cat. Austral. Crust. p. 52.

Carapace shaped much as in *Polycremnus*, hexagonal, more than ¾

as long as broad, the regions well demarcated, well areolated, finely and closely granular.

Front horizontal, square-cut, prominent, sublaminar, notched and grooved in the middle line.

Antero-lateral borders cut into four blunt-pointed rather coarse granular teeth, of which the two posterior are the strongest.

Chelipeds subequal: wrist and hand covered with granular fungiform tubercles, which are arranged in regular longitudinal series on the hand.

Upper border of meropodites of legs without spinules.

In the Indian Museum is a single small male from off the Ganjam coast, $7\frac{1}{2}$–$9\frac{1}{2}$ fms.

Henderson (Trans. Linn. Soc. (2) V. 1893, p. 360) appears to consider this species to belong to the genus *Halimede*, but it has not—if my identification be correct—the curious male abdomen which distinguishes that genus from every other Xanthoid except *Polycremnus*.

Cycloxanthus, A. Milne Edwards.

Cycloxanthus, A. Milne Edwards, Ann. Sci. Nat., Zool. (4) XX. 1863, p. 278; Nouv. Archiv. du Mus. IX. 1873, p. 209; Miss. Sci. Mex., Crust. p. 258.

Carapace relatively long: front horizontal, prominent, and divided by a median fissure into two lamellar lobes, and separated from the internal orbital angles by a deepish notch.

Orbits small: two fissures in the supra-orbital margin: external orbital angles inconspicuous, continuous with the antero-lateral borders.

Antero-lateral borders very long, strongly curved, extending far backwards.

Basal antennal joint short, but touching the front at its inner angle: the flagellum inserted in the orbital hiatus.

Merus of the external maxillipeds subquadrilateral.

The abdomen of the male consists of five movable pieces.

This genus is not represented in the Indian Museum.

51. *Cycloxanthus lineatus*, A. Milne Edwards.

Cycloxanthus lineatus, A. Milne Edwards, Ann. Soc. Entom. France, (4) VII. 1867, p. 269, and Nouv. Archiv. du Mus. IX. 1873, p. 209, pl. vi. fig. 5: Miers, Zool. H. M. S. Alert, pp. 183, 212: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 360.

Carapace broad, very depressed, smooth; the regions little defined; antero-lateral borders prolonged far backwards and obscurely divided into four dentiform lobes.

Outer orbital angle inconspicuous, orbits small, the upper margin with a narrow cleft.

Front very prominent, lamellar, a little sinuous at the sides, prominent towards the middle where there is a linear fissure.

Chelipeds unequal: the hand has the inner surface flattened, the upper border obtusely crested, and the outer surface rugose: the wrist, which has its outer border much dilated, is equally rugose.

The legs are weak and smooth, the dactylus being a little compressed.

Carapace yellowish, very symmetrically marked with numerous reddish-brown lines, some of which run obliquely from the antero-lateral borders towards the front and towards the middle line, while others run from the posterior border forwards to the cardiac region.

There are no specimens in the Indian Museum collection.

Hoploxanthus, n. gen.

Carapace hexagonal, moderately broad, moderately convex fore and aft, its regions all well defined, and to a certain extent subdivided.

The antero-lateral borders are thin and crest-like and are on a much lower plane than the rest of the carapace, *they end either in both sexes or in the female only, in a large horizontal lateral epibranchial spine,* and may either be cut into large triangular teeth or may be only obscurely notched.

Postero-lateral borders straight, moderately convergent, about as long as the antero-lateral.

Front lamellar, prominent, horizontal, notched in the middle line, about a fourth to two-sevenths the greatest breadth of the carapace.

Orbital margin with two faintish notches or suture lines above, and with a small triangular gap just below the outer angle: the inner angle of the lower orbital margin forms a strongly-projecting tooth: the outer orbital angle is confluent with the antero-lateral margin.

The antennules fold obliquely. The basal antennal joint is rather slender and meets the front: the flagellum, which is about as long as the major diameter of the orbit, is lodged in the orbital hiatus.

The anterior edge of the external maxillipeds is almost transverse.

Chelipeds unequal, fingers sharp pointed: legs rather slender.

No ridges, defining the efferent branchial channels, on the plate.

The abdomen of the male consists of seven separate segments, the last segment being no longer than the longest of the others.

This genus is closely allied to *Xantho* and *Cycloxanthus*, it is also related not distantly to *Halimede* and to *Lophozozymus*.

52. *Hoploxanthus hextii*, n. sp.

The whole of the carapace, legs, and outer surface of chelipeds is covered with a dense, darkish, extremely short, velvety or branny pubescence.

Carapace hexagonal, moderately broad, moderately convex, the regions well defined, tumid, their convexities granular.

Front prominent beyond the orbits and separated from them by a notch, square-cut, bilaminar.

Antero-lateral border thin sharp, cut into four triangular laciniate teeth, the last of which—in the female but not in the male—is an acute salient spine.

The edges of all the teeth, of the front, and of the orbit are finely granular.

The postero-lateral border is elegantly granular and quite straight: dorsal to it the wall of the carapace forms a distinct postero-lateral facet, sharply marked off from the general surface of the carapace.

Chelipeds a little unequal in both sexes: wrist with a small somewhat cristiform expansion at the outer angle and a tooth at the inner angle: upper surface of hand with two or three longitudinal raised sculptured lines, the innermost of which consists of a blunt cristiform lobule followed by one or two blunt denticles, the outer one or two being simply crenulate and granular; the outer surface of the smaller hand is everywhere granular, that of the larger hand is granular in part—in both cases some of the granules form slightly-raised longitudinal lines.

Legs long, slender.

Colours in spirit yellowish brown.

Carapace of male 10 millim. long, 13 millim. broad; of female, 11 millim. long, 17 millim. broad.

In the Indian Museum are 3 specimens from the east coast of India and 2 from the Nicobars.

53. *Hoploxanthus cultripes*, n. sp.

Carapace hexagonal: the three gastric subregions (lateral and postmedial), the cardiac region, and two (smaller) median epibranchial regions stand out as very prominent granular bosses, and the convexity of the lateral epibranchial spine, and the postero-lateral border and its neighbourhood are granular,—otherwise the carapace is quite smooth.

Front prominent, sublaminar, with a curved convex finely granular edge, faintly notched in the middle line and hardly separated from the supra-orbital angles.

Antero-lateral borders very thin and sharp, obscurely divided by faint notches and fainter grooves into 3 broad inconspicuous lobes, and ending in a strong horizontal pyramidal lateral epibranchial spine.

The chelipeds in the unique specimen are lost; but the legs are remarkable in having the upper edge of the merus and carpus sharply carinate, the carpal joints having a second blunter and lower keel along the dorsal surface.

The legs and the undersurface of the body are covered with the same dense extremely short pubescence as occurs in *H. hextii*.

The single imperfect male in the Indian Museum comes from Karáchi, and is 9 millim. long and 13 millim. broad.

Orphnoxanthus, n. gen.

Carapace, owing to the inflation of the branchial regions almost quadrilateral in outline and almost concave from side to side, but very decidedly convex fore and aft, broad, the regions well defined but not to any great extent areolated.

Fronto-orbital border a little more than half the greatest breadth of the carapace in extent. Front about a third the greatest width of the carapace, lamellar, projecting horizontally beyond the orbits, broadly and faintly bilobed. Orbital margin entire: orbits and eyes small.

Antero-lateral border cut into four teeth; postero-lateral borders convergent only in the posterior half; posterior border long.

The antennules fold almost transversely. The basal antennal joint is very short and only just touches the turned down edge of the front; the flagellum which is very long (between 2 and 3 times the length of the orbit) is lodged in the narrow orbital hiatus.

Owing to the bulge of the outer wall of the efferent branchial canal and the consequent puffing out of the pterygostomian regions, the front edge of the merus of the external maxillipeds is quite transverse or even slightly oblique from without inwards.

The chelipeds are massive and unequal; the fingers are compressed and pointed. The legs are very slender.

The abdomen of the male consists of 5 segments, the 3rd–5th somites being fused.

Owing to the inflation of the pterygostomian regions the efferent branchial channels are permanently open, but the low crests that define them are confined to the posterior part of the endostome.

This genus appears to represent one of the links between *Galene* and *Xantho*. The single known species comes from the Bay of Bengal, 105–350 fms.

54. *Orphnoxanthus microps*, Alcock and Anderson.

Xanthodes microps, Alcock and Anderson, J. A. S. B. LXIII. pt. 2, 1894, p. 183.

Carapace about $\frac{2}{3}$ as long as broad, almost quadrilateral in outline, strongly convex fore and aft, but, owing to the inflation of the branchial regions, a little *concave* from side to side; it is rather closely covered with a very fine short fur, beneath which the surface may be granular or nearly smooth, but the margins are always granular. The regions are all well defined and are slightly tumid: the gastric region is divided into 3 gently tumid subregions, the branchio-hepatic regions are subdivided transversely into three areas, and the fronto-orbital margin is also marked off.

The antero-lateral border is thin and sharp and is cut into four sharp finely granular teeth, the first of which runs by a long nearly transverse margin, into the (undefined) angle of the orbit. The front is laminar and projects beyond the supra-orbital margin; it is square-cut and is slightly notched in the middle line, so as to form two broad shallow lobes. The eyes are small and are to a variable extent deficient in pigment.

The chelipeds are unequal—very much more so in the male than in the female: the arm to a variable extent, the entire surface of the wrist, and the upper border of the hand are scabrous and more or less hairy; the other surfaces of the hand may be smooth and polished, or the outer surface may be to a variable extent granular: the fingers are large, compressed and pointed.

In the male the larger cheliped is about $2\frac{1}{2}$ times the length of the carapace (the hand and fingers forming slightly more than half the length) and nearly half the arm projects beyond the carapace in repose.

The legs are long slender and finely and sparsely hairy: the upper edge of the meropodites is scabrous or closely spinulate.

Colours in spirit; chestnut brown with blackish fingers. Length of carapace (average) 11 millim., breadth 15 to 16 millim.

In the Indian Museum are 29 specimens from the Bay of Bengal, 105–350 fms.

Etisus, Milne Edwards.

Etisus, Milne Edwards, Hist. Nat. Crust. I. 410.

Etisus, Dana, Silliman's Amer. Journ. Sci. and Art. (2) XII. 1851, p. 126; and U. S. Expl. Exp. Crust. pt. I. p. 183.

Etisus, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, p. 291; and Nouv. Archiv. du Mus. IX. 1873, p. 233.

Etisus, Miers, Challenger Brachyura, p. 131.

Carapace broad, moderately convex in both directions, with the

regions delimited by broad shallow rather indistinct depressions and having a slightly uneven but not definitely lobulated surface.

The front is laminar and narrow; it projects well beyond the supra-orbital border from which it is separated by a deep notch, and is split by a suture in the middle line. The orbital margin is broken by three sutures or actual fissures, and the tooth at the inner angle of the lower border is very prominent.

The antero-lateral borders, which are a good deal longer than the postero-lateral, are cut into from 4 to 8 lobes or procurved spines.

The basal antennal joint has its outer angle produced and tightly wedged into the internal orbital gap, which it fills; but the flagellum, which is of good length, does not arise within the orbit but at the base of this process.

The outer border of the merus of the external maxillipeds is oblique.

The chelipeds, which are very massive and rather long, are a little unequal in the male: the fingers are very stout and strongly arched, and they meet only at the tip, which is broad expanded and hollowed out almost like a horse's hoof.

The abdomen of the male is five-jointed, the 3rd–5th somites being fused.

Key to the Indian species of Etisus.

I. More than four teeth on the antero-lateral border, excluding the external angle of the orbit: free edge of front not convex: the process of the basal antennal joint completely separates the lower from the upper inner angle of the orbit: legs spiny:—
   i. Seven or eight uneven unequal-sized claw-like teeth on the antero-lateral border ..... *E. dentatus.*
   ii. Seven evenly arranged broad compressed procurved teeth of almost uniform size on the antero-lateral margin ..... *E. utilis.*

II. Four teeth (excluding the external angle of the orbit) on the antero-lateral border: free edge of front bow-shaped: the tooth at the inner canthus of the orbit in contact with the cave of the orbit beyond the tip of the process of the basal antennal joint: legs not spiny ..... *E. lævimanus.*

55. *Etisus dentatus*, (Herbst) Edw.

Cancer dentatus, Herbst, Krabben, I. ii. 186, pl. xi. fig. 66.

Etisus dentatus, Milne Edwards, Hist. Nat. Crust. I. 411: Dana, U. S. Expl. Exp. Crust. pt. I. 185, pl. x. figs. 2a–b: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 233: Miers, P. Z. S. 1877, p. 134: Richters in Möbius, Meeresf. Maurit.

p. 146: Lenz and Richters, Abh. Senck. Ges. XII. 1881, p. 421: Haswell, Cat. Austral. Crust. p. 53.

Etisodes dentatus, Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 472.

Carapace smooth (non-granular): gastric region well defined except at cardiac end, its surface broken, but not definitely lobulated; similarly with the branchio-hepatic regions.

The antero-lateral border bears 7 or 8 (exclusive of the external orbital angle) pro-curved claw-like teeth, uneven both as to size and place, though four of them—which correspond to the 4 lobes of so many other Cancroids—are much of one size and much larger than the other 3 or 4.

The front is lamellar with the free edge slightly and angularly emarginate, and is cleft in the middle line by a fine sharp groove that extends well on to the gastric region. The orbital margin has three teeth, separated by fissures, in its outer part. The tooth at the inner angle of the lower edge of the orbit is sharp, and does not come into contact with the cave of the orbit.

Chelipeds in the adult male a little more, in the adult female a little less than twice the length of the carapace: the arm has a few spinules and a good deal of hair along the upper border, and some granules or blunt spinules along its lower and its distal borders; the wrist has a strong spike at its inner angle; the hand may or may not have a few pimple-like granules on its upper outer surface; and the fingers are fluted, the ridges on the dactylus being crenulate or dentate. Otherwise the chelipeds are smooth.

In the legs, the merus has both the dorsal and the ventral edges thickly fringed with long stiff hairs, the dorsal edge being also granular; the carpus has at least three series of spinules along its dorsal surface; the propodite has a rather granular surface with about four (dorsal) series of spinules, and has much of its lower edge fringed with long stiff hairs; and the dactylus is spiny above and hairy below.

Colours of a specimen 7 years in spirit: upper surface bright maroon fading to yellow near the posterior border; fingers black.

In the Indian Museum are a young female from Port Blair (Andamans), and three large males (carapace 72 millim. by 111 millim.) from Great Coco I. (Andamans) and East I. Andamans.

56. *Etisus utilis*, Lucas.

Etisus utilis, Lucas in Jacquinot, Voy. Astrolabe, Crust. p. 27, pl. ii. fig. 6: Heller, Novara Crust. p. 16: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 233: E. Nauck, Zeits. Wiss. Zool. XXXIV. 1880, p. 58 (gastric teeth): Lenz and Richters, Abh. Senck. Ges. XII. 1881, p. 421: Ortmann, Zool. Jahrb. Syst. VII, 1893-94, p. 472.

Carapace smooth (non-granular), distantly pitted in the anterior and lateral parts. Gastric region fairly well defined, except at the cardiac end, its surface showing indistinct traces of lobulation: branchio-hepatic regions with the surface a little uneven.

Antero-lateral border with 7 (exclusive of the external orbital angle) regular, even, nearly uniform, compressed, procurved teeth.

Front as in *Etisus dentatus*, but with the angles a little sharper cut. The edge of the orbit is trenchant, and near the outer angle are 3 not very distinct suture-lines: the tooth at the inner angle of the lower border of the orbit is prominent, and does not come into contact with the eave of the orbit.

Chelipeds in the adult male twice to twice-and-a-half, in the adult female once-and-a-half to once-and-two-thirds the length of the carapace: upper and lower edges of arm coarsely and unevenly granular, much of the upper edge also hairy; distal end of wrist with 4 or 5 teeth, the inner two of which are long and large; the hand has, along its upper border, a double crest of strong teeth, continued in blunter form along the finger, and on the outer surface of the hand there may be a few pimple-like granules.

In the legs, both the upper and lower edges — but most the upper edge — of the merus, carpus and propodite are thickly fringed with long bristles, as also is the lower edge of the dactylus; the upper edge of the merus has also a row of small spines, and the upper edge of the carpus, propus and dactylus a double row of increasingly larger spines: the lower edge also of the propus and dactylus is spiny.

Colours in spirit: dull yellowish pink, fingers black.

In the Indian Museum are a male and a female from the Singapore Museum, and supposed to have come from Singapore. (Heller *l.c.* records this species from the Nicobars).

57. *Etisus laevimanus*, Randall.

Etisus laevimanus, Randall, Journ. Acad. Nat. Sci. Philad. 1839, p. 115: Dana. Proc. Ac. Nat. Sci. Phila. 1852, p. 76, and U. S. Expl. Exp. Crust. pt. I. p. 185, pl. x. figs. 1*a–b*: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 234: Kossmann, Reise roth Meer. Crust. p. 30: T. Tozzetti, Magenta Crust. p. 29: Streets, Bull. U. S. Nat. Mus. VII. 1877, p. 105: Hilgendorf, MB. Ak. Berl. 1878, p. 791: Richters in Möbius Meeresf. Maurit. p. 146: de Man, Notes Leyden Mus. III. 1881, p. 99; and Archiv. für Naturges. LIII. 1887, i. p. 289; and Zool. Jahrb. Syst. VIII. 1894-95, p. 527: Haswell, Cat. Austral. Crust. p. 54: Miers, Zool. H. M. S. Alert, pp. 183, 217; and Challenger Brachyura, p. 132: F. Muller, Verh. Ges. Basel VIII. 1886, p. 474: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 362: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 473: Whitelegge, Mem. Austral. Mus. III, 1897, p. 131.

Etisus macrodactylus, Lucas in Jacquinot's Voy. Astrolabe, Crust p. 30, pl. ix. fig. 2, (A. M. E.)

Etisus convexus, Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 31.

Etisus maculatus, Heller, Abh. zool.-bot. Ges. Wien XI. 1861, p. 9; and SB. Ak. Wien, XLIII. 1861, p. 332: de Man, Notes Leyden Mus. II. 1880, p. 173.

Gastric region well defined on all sides, its anterior part distinctly lobulated; branchio-hepatic regions with three lobules following the curve of the antero-lateral margins.

Antero-lateral border with 4 broad teeth (exclusive of the external orbital angle), the last two of which culminate in procurved points.

The front is cleft in the middle line by a groove; its free edge is bow-shaped. The orbital margin has, in its outer half, three lobular constrictions defined by three grooves.

The tooth at the inner angle of the lower edge of the orbit is blunt, and it comes into contact with the eave of the orbit beyond the tip of the process of the basal joint of the antenna.

Chelipeds in the adult male about twice and a half, in the adult female a little less than twice the length of the carapace; the wrist has a blunt spine at the inner angle, otherwise they are smooth and unsculptured.

Legs with both edges of all the long joints hairy, most so on the lower edge of the dactylus and on the upper edge of the other joints: the upper edge of the propodite and dactylus is also sharply granular, but there are no spines.

Colours in spirit variable: dull yellow, or dull greenish-brown, or sea-green, often with cinnamon coloured patches or small spots.

In the Indian Museum are 20 specimens, from Persian Gulf, Karáchi, Bombay, Laccadives, Andamans, and Singapore, (besides specimens from Celebes and Mauritius).

Etisodes, Dana.

Etisodes, Dana, Silliman's Amer. Journ. Sci. and Arts, (2) XII. 1851, p. 126 (footnote); Proc. Ac. Nat. Sci. Phila. 1852, p. 77; and U. S. Expl. Exp. Crust. pt. I. p. 184.

Etisodes, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1861, p. 291; and Nouv. Archiv. du Mus. IX. 1873, p. 235.

The genus *Etisodes* resembles *Etisus* in the characteristic form and lie of the basal joint of the antennæ, and in the characteristic relation of the front to the orbits; but it differs in the following particulars:—

The carapace is much longer and narrower; it is less convex, especially in its posterior third; its regions are clearly defined, and are definitely sculptured into lobules in the anterior two-thirds of the carapace: the

chelipeds are much shorter, the difference in length being chiefly in the arm; and the fingers though well hollowed out at tip are not so hoof-like.

58. *Etisodes anaglyptus*, (Edw.)

Cancer anaglyptus, Milne Edwards in Cuvier, Règne An. Crust. pl. xi. fig. 4.

Etisus anaglyptus, Milne Edwards, Hist. Nat. Crust. I. 411: Hess, Archiv. für Naturges. XXXI. 1865, i. p. 134: de Man, Notes Leyden Mus. XIII. 1891, p. 7.

Etisodes anaglyptus, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 235: Haswell, Cat. Austral. Crust. p. 55: Miers, Zool. H. M. S. Alert, pp. 183, 218: Ortmann, Zool. Jahrb. VII. 1893-94, p. 471.

Length of carapace nearly three-quarters the breadth.

The regions are all convex and well defined, and the gastric and branchio-hepatic regions are subdivided into convex lobules, the surface of which is somewhat dented transversely.

The antero-lateral border is cut into four (excluding the external angle of the orbit) procurved teeth, the last two of which are claw-like.

The front projects strongly, and is divided into two dorsally-convex lobes, of which the free edge may either be cut obliquely inwards, or be so excised as to give the front a four-pronged look.

The orbital margin has, in its outer half, three grooves separating three blunt teeth: the tooth at the lower inner angle does not come in contact with the eave of the orbit.

Chelipeds in the male not much more than half again as long as the carapace: upper and anterior borders of arm hairy; upper surface of wrist nodular, with two teeth (one large) at the inner angle; upper outer surface of hand with rather irregular longitudinal series of little nodules and granules; dactylus fluted, the ridges being crenulated.

Legs very shaggy, the hairs almost concealing some lines of sharp granules or spinules on the propodite and dactylus.

In the Indian Museum is a specimen from the Persian Gulf (besides one from Samoa).

59. *Etisodes electra* (Herbst), Miers.

Cancer electra and *? metis*, Herbst, Krabben, III. ii. 34 and 36, pl. li. fig. 6, and pl. liv. fig. 3.

Etisus rugosus, Lucas in Jacquinot's Voy. Astrolabe III. Crust. p. 33, pl. iv. fig. 2 (*fide* A. M. E., *infra*).

? Chlorodius dentifrons, Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 34.

Etisodes sculptilis, Heller, Abh. zool.-bot. Ges. Wien XI. 1861, p. 10, and SB. Ak. Wien XLIII. 1861, p. 333: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 236, pl. ix. fig. 2: Kossmann Reise roth. Meer., Crust. p. 30.

Chlorodius samoensis, Miers, Ann. Mag. Nat. Hist. (4) XVI. 1875, p. 341 (Miers *infra*.)

Etisodes electra, Miers, Zool. H. M. S. Alert, pp. 183, 217, 517, 532: de Man, Archiv. für Naturges. LIII. 1887, i. p. 290: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 362.

Closely resembles *E. anaglyptus*, from which it is distinguished by the following characters:—

(1) the carapace is even longer and narrower, the length being quite $\frac{3}{4}$ the breadth;

(2) the whole surface of the lobules of the carapace and of the nodules of the wrist and hand is closely granular;

(3) the front is cut into four teeth of nearly equal size;

(4) the legs, though hairy, are not so shaggy.

In the Indian Museum are 4 specimens from the Andamans and Nicobars, (besides three from Upolu and Mauritius).

Alliance V. *Halimedoida.*

Halimede. Polycremnus.

Polycremnus, Gerstaecker.

Polycremnus, Gerstaecker, Archiv. für Naturges. XXII. 1856, p. 120.

Carapace approaching the pentagonal, not very much broader than long, distinctly convex fore-and-aft, slightly convex from side to side, the regions rather indistinctly defined and to a certain extent subdivided by broad shallow depressions.

The antero-lateral border is elegantly four-lobed and is continued beneath the orbits to the outer angle of the buccal cavern. The postero-lateral borders are moderately convergent and are about equal in length to the antero-lateral borders and also to the posterior border.

The fronto-orbital border is less than half the greatest width of the carapace in extent. The front is narrow (less than a fourth the greatest breadth of the carapace), sublaminar or hood-like, bilobed, and projects well beyond the orbits. The three grooves in the vicinity of the outer angle of the orbit are distinct. Eyes on short thick stalks. The inner angle of the lower edge of the orbit is strongly produced.

The antennules fold obliquely. The basal antennal joint is long, rather slender, and well in contact with the front: the flagellum is long (a good deal longer than the major diameter of the orbit) and is lodged in the narrow orbital hiatus.

Anterior edge of merus of external maxillipeds almost transverse.

Chelipeds unequal in both sexes. Legs stout.

Abdomen of the male with all 7 joints distinct and separate: the last segment unusually long and acute.

60. *Polycremnus ochtodes*, (Herbst) Gerstaecker.

Cancer ochtodes, Herbst, Krabben, I. ii. 158, pl. viii. fig. 54: Fabricius, Ent. Syst. II. 455, and Suppl. p. 337.

Galene ochtodes, Adams and White, Samarang Crust. p. 43, pl. x. fig. 2.

Polycremnus ochtodes, Gerstaecker, Archiv. fur Naturges. XXII. 1856, p. 121: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1886-90, p. 110: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 359.

Carapace oval-pentagonal, its surface smooth, a little lumpy owing to the broad shallow depressions that somewhat indistinctly separate and to a certain extent subdivide the regions.

All the borders are of about equal length: the antero-lateral is divided into four rounded deep-cut lobes, decreasing in size from behind forwards, and is continued beneath the slightly tumid lobe of the orbital angle to the angle of the buccal cavern: on the postero-lateral border just behind the junction with the antero-lateral are usually a few granules.

The front projects horizontally forward beyond the orbits and consists of two unguiform lobes separated in all their extent by a deep narrow groove: it is a distinct rostrum.

The chelipeds are unequal, most markedly so in the male. The upper border of the arm is elegantly cut into teeth or pisiform or pearl-like tubercles: two similar tubercles stand, one below the other, at the inner angle of the wrist, and the upper and outer surfaces of the wrist are more or less covered with papule-like or pustulous tubercles: the upper border of the hand, and of the basal half of the finger bears a row of pisiform tubercles, and there are numerous pustulous tubercles on the upper surface and on the proximal part of the outer surface of the hand: fingers sharp pointed.

The legs are smooth, but the upper border of the meropodites of all, or of the first three pairs, is distantly serrate or spinulous: the dactylus and the neighbouring part of the lower border of the propodite is furred.

Colours in spirit leaden grey, or yellowish with livid markings.

In the Indian Museum are 2 specimens from the Madras Coast and one from Penang.

Halimede, De Haan.

Halimede, De Haan, Faun. Japon. Crust. p. 35: Dana, Amer. Journ. Sci. and Arts, (2) XII. 1851, p. 125, and U. S. Expl. Exp. Crust. pt. I. p. 149.

Closely allied to *Polycremnus*, having the same form of male abdomen.

The genus is not represented in the Indian Museum.

61. *Halimede (?) thurstoni*, Henderson.

Halimede thurstoni, Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 360, pl. xxxvi. figs. 13, 14.

It appears to me doubtful whether this is a true *Halimede*.

Alliance VI. *Galenoida*. [or Subfamily Galeninæ].

Galene, De Haan.

Galene, De Haan, Faun. Japon. Crust. p. 19.
Galene, Miers, Challenger Brachyura, p. 118 (footnote.)

Carapace approaching the quadrilateral, strongly convex fore and aft, little convex from side to side; its surface granular in parts, or nearly smooth, and with the regions more or less distinctly shown by broad shallow rather vague depressions.

Antero-lateral border moderately arched, indistinctly four-lobed — the last 2 or 3 lobes in the typical species being marked by spine-like teeth: postero-lateral borders very slightly convergent, rather longer than the chord of the antero-lateral: posterior border long.

Fronto-orbital border less than half the greatest width of the carapace. Front obliquely deflexed, less than one-fifth the greatest width of the carapace in extent, bilobed or quadridentate. Orbital margin with the three grooves in the vicinity of the outer angle distinct: eyes on thick stalks of moderate length. The antennules fold nearly transversely.

Basal antennal joint broad, extremely short, not nearly reaching the front; flagellum longish (longer than the major diameter of the orbit) lodged in the broad orbital hiatus.

Anterior edge of merus of external maxillipeds a little oblique. Chelipeds massive, unequal in both sexes, fingers pointed. Legs long, stoutish.

Abdomen of male with all 7 joints separate and distinct.

No crests, delimiting efferent branchial canals, on the endostome.

62. *Galene bispinosa* (Herbst) De Haan.

Cancer bispinosus, Herbst, Krabben, I. ii. 144, pl. vi. fig. 45, and III. ii. 11, pl. liv. fig. 1: Fabricius, Ent. Syst. II. 446, and Suppl. p. 337.
Cancer (Galene) bispinosus, De Haan, Faun. Japon. Crust. p. 49, pl. v. fig. 2.
Galene bispinosa, A. O. Walker, Journ. Linn. Soc., Zool., XX. 1886–90, p. 110.

Carapace moderately broad, somewhat pentagonal, its surface for the greater part smooth, but usually scabrous near the borders—especially the postero-lateral borders; its surface is also somewhat lumpy,

owing to the very broad depressions which somewhat vaguely delimit and to a certain extent subdivide the regions. Pterygostomian region more or less hairy.

The antero-lateral borders are very indistinctly 4-lobed, the first lobe being almost obsolete, the second being usually marked by a granular denticle, and the third and fourth by two coarse granular spines. The postero-lateral borders, which are little convergent, are slightly longer than the chord of the antero-lateral. The posterior border is about half the greatest width of the carapace.

Front really bilobed, but with both the inner and the outer angles of each lobe so equally prominent as to appear 4-dentate.

Chelipeds unequal: exposed surfaces of arm either smooth, or more or less scabrous, both borders of arm uneven and hairy, the distal end of the upper border with two strong teeth: both the inner and the outer angles of the wrist well pronounced, or even spiniform; the exposed surfaces of the wrist may be almost smooth, but are usually studded, to a variable extent, with sharp little tubercles; the upper outer and lower surfaces of the hand may be almost smooth, but are usually studded, in the proximal third to three-quarters, with similar tubercles, in more or less distinct lines: fingers long, sharp-pointed, the apposed edges with strong molariform teeth.

Legs long, stoutish; upper border of the meropodites scabrous and spinulate, upper border of last 3 joints, and lower border of last 2, plumose.

Colours in spirit, leaden white or yellowish.

In the Indian Museum are 3 specimens from the Vizagapatam coast and 1* from Tennasserim, (besides one from Hongkong): the amount of granulation of the borders of the carapace and of the chelipeds is different in all.

Subfamily II. ACTAEINÆ.

Actæa, De Haan, A. Milne Edwards.

Actæa, De Haan, Faun. Jap. Crust. p. 18.
Actæa and *Actæodes*, Dana, U. S. Expl. Exp. Crust. pt. I. pp. 162, 194.
Actæa, Heller, Crust. Sudl. Europ. p. 69.
Actæa, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, pp. 259, 260.
Psaumis, Kossmann, Crust. roth. Meer. p. 26.
Actæa and *Actæodes*, Miers, Challenger Brachyura, pp. 118, 135.

Carapace convex fore and aft, slightly convex or flat from side to side, usually broad, the regions well demarcated by deep grooves, and again subdivided into lobules, which are usually convex and granular. Antero-lateral borders usually four-lobed, but the lobes are shallow and often indistinct. Postero-lateral borders usually concave, always short, not strongly convergent.

Front between a third and a fourth the greatest width of the carapace, deflexed, cleft in the middle line into two lobes. Upper edge of orbit tumid, usually with two fissures or sutures; a third below the outer orbital angle: eyestalks short and thick.

Antennules folding obliquely or nearly transversely. Basal antennal joint usually stopping at the angle of the deflexed front, but often prolonged beyond this, towards or nearly into the orbit; the flagellum is about as long as the orbit, and is lodged in the orbital hiatus.

Merus of the external maxillipeds with the anterior border little oblique.

Chelipeds equal in both sexes; fingers usually blunt-pointed, sometimes hollowed-out at tip.

Abdomen of the male five-jointed, somites 3, 4, 5 fused.

Small crabs, distinguished by the elaborate lobulation of the carapace, and by the form of the front, which is usually deep-cleft in the middle line to form two prominent round-pointed lobes.

Key to the Indian species of Actæa.

I. Legs of ordinary form:—
  i. The lobules of the carapace, and the legs, when granular, bear miliary or vesiculous granules of nearly uniform size, not tubercles:—
    1. Length of the carapace two-thirds or less than two-thirds the breadth, postero-lateral borders extremely short and concave:—
      a. Carapace and legs covered with a short dense fur, which does not, however, conceal the lobules or their granules:—
        α. Fingers hollowed at tip, fur black ... *A. tomentosa.*
        β. Fingers long and pointed, fur light brown ..... *A. areolata.*
      b. Carapace and legs with numerous bristles, which do not form a coat; fingers blunt-pointed, but not appreciably hollowed at tip. *A. hirsutissima.*
    2. Length of the carapace rather more than two-thirds the breadth, postero-lateral borders slightly concave:—
      a. Legs and chelipeds lobulated in the same style as the carapace:—
        α. Lobules of the carapace very markedly isolated and very convex, interlobular grooves very broad and deep, and hairy ..... *A. rufopunctata.*
        β. Lobules of the carapace not remarkably isolated, the grooves with a short almost invisible fur ..... *A. speciosa.*

b. Wrist and hands sublobular, corresponding joints of legs only a little dimpled (areolation of carapace complete) .... *A. ruppellii.*

c. Chelipeds and legs with a plain granular surface, areolation of carapace faint anteriorly, incomplete posteriorly :—

a. Lobulation of antero-lateral border very indistinct, no hairs on the carapace, which is thick and convex ..... *A. obesa.*

β. Lobulation of antero-lateral border fairly distinct the lobules being granular ; a thin coat of hair :—

x. Carapace of ordinary Actæa form .... *A. pulchella.*

y. Carapace more than $\frac{3}{4}$ as long as broad ; its posterior half remarkably flat..... *A. parvula.*

ii. Carapace covered with tubercles, legs with tubercles or spines :—

1. Carapace with plain isolated tubercles :—

a. Carapace with pearly tubercles and granules ; front bilobed, but each lobe so deeply excised as to appear itself bilobed..... *A. nodulosa.*

b. Carapace with coarse spine-like tubercles ; front broadly bilobed ..... *A. echinus.*

c. Carapace and chelipeds with pedicled pisiform tubercles, legs with thorns ..... *A. peronii.*

d. Carapace, chelipeds and legs with pedicled, flat-topped tubercles which at the margins become petaloid ; front bilobed, each lobe cut into four petaloid teeth..... *A. flosculata.*

2. Carapace closely covered with confluent tubercles the surfaces of which are themselves formed of confluent granules :—

a. Tubercles of carapace very rough, raspberry-like, some of those on the legs often spiny : carapace about seven-ninths as long as broad. *A. granulata.*

b. Tubercles of carapace smooth though pitted, those of the legs never spiny : carapace about two-thirds as long as broad..... *A. calculosa.*

II. Propodites and carpopodites of legs dorsally bicarinate in such a way that the space between the crests appears like a trough or a series of cups :—

i. Propodites and carpopodites each with one trough ; lobules of carapace granular ; front not projecting much. *A. cavipes.*

ii. Carpopodites with at least two cups ; lobules of carapace pitted as well as granular ; front projecting far beyond the inner angle of the orbit..... *A. fossulata.*

63. *Actæa tomentosa*, (Edw.) A. Milne Edwards.

Zozymus tomentosus, Milne Edwards, Hist. Nat. Crust. I. 385, and in Cuvier. Règne An. Crust. pl. xi. *bis*, fig. 2.

Actæa tomentosa, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 262, and IX. 1873, p. 191: A. Targioni Tozzetti, "Magenta" Crost. p. 35, pl. iii. figs. 14 &c.: Hilgendorf, MB. Ak. Berl. 1878, p. 788: Richters in Möbius Meeresf. Maurit. p. 145: Haswell, Cat. Austral. Crust. p. 44: Ortmann, Zool. Jahrbuch., Syst. &c., VII. 1893-94, p. 453, and in Semon's Zool. Forschungsr. (Jena. Denkschr. VIII) Crust. p. 50.

Actæodes tomentosus, Dana U. S. Expl. Exp. Crust. pt. I. p. 197: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 32: Heller, SB. Ak. Wien, XLIII. 1861, p. 328, and Novara Crust. p. 17: Miers, P. Z. S. 1877, p. 134; and 1879 pp. 20 and 30; and Phil. Trans. Vol. 168, 1879, p. 486; and Ann. Mag. Nat. Hist. (5) V. 1880, p. 234; and Zool. H. M. S. Alert, pp. 517 and 530; and Challenger Brachyura, p. 135: de Man, Archiv. fur Naturges. LIII. 1887, i. p. 252; and in Weber's Zool. Ergeb, Niederl. Ost. Ind. II. 1892, p. 278; and Zool. Jahrb., Syst. &c., VIII. 1894-95, p. 499: Cano, Boll. Soc. Nat. Napol. III. 1889, p. 199.

Carapace ovoid and very broad, its greatest length less than two-thirds its greatest breadth, its dorsal surface—like that of all the surfaces of the chelipeds and legs that are exposed in repose—covered, as closely and evenly as possible, with a dense short blackish felt through which peep the shiny tops of very numerous large vesiculous granules. This felt is not so long as to obscure the areolation of the carapace which is very perfect and in bold relief, but it obscures the fact that the deep-cut grooves that separate the lobules are smooth.

The lobules—excluding those of the antero-lateral and supra-orbital margins and those on the front—are 21 in number, the anterior 8 with the long diameter fore-and-aft, the posterior 5 with the long diameter transverse.

The front, which is vertically deflexed and does not break the wide even sweep of the antero-lateral borders, appears nearly equally four-lobed, the outer lobe on either side being formed by the tumid supra-orbital border.

The antero-lateral borders are long and beautifully arched; when undenuded they look entire, but when denuded they are seen to be cut by narrow clefts into four very shallow lobes of unequal size,—the clefts being continued as grooves on to the under surface of the carapace. The very short postero-lateral borders are extremely concave.

The tumid supra-orbital border is cleft into lobules by two fissures similar to the grooves of the carapace, and there is a third fissure at the outer angle of the orbit.

The whole under surface of the carapace, and the surfaces of the sternum and external maxillipeds and abdominal terga, are covered with a dense felt that obscures all the granulation that exists.

The basal antennal joint is broad, and its outer angle does not fall very far short of the inner angle of the floor of the orbit.

The legs, besides the felt and the granules (which are conical rather than vesiculous) already spoken of, have their edges—but chiefly the anterior edge—fringed with coarse tufted hair: similar hair occurs on the edges of the arm.

The fingers are short, with broadly-rounded hollowed-out tips.

Colours in spirit, as in life, blackish.

In the Indian Museum are 115 specimens from the Nicobars, Andamans, Palk Str., and Laccadives (besides 31 from Mauritius, Australia and the South Sea Is.).

64. *Actæa areolata*, Dana.

Actæa areolata, Dana, Proc. Acad. Nat. Sci. Philad. 1852, p. 73, and U. S. Expl. Exp. Crust. pt. I. p. 162, pl. viii. figs. 1a–b: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 264: E. Nauck, Zeits. Wiss. Zool. XXXIV. 1880. p. 54 (gastric teeth): ? Miers, Zool. H. M. S. Alert, pp. 182, 209: de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 25: Zehntner, Rev. Suisse Zool. II. 1894, p. 147.

Carapace in proportions and outline almost exactly similar to *A. tomentosa*. Its surface and the exposed surfaces of the chelipeds and legs is also covered as densely as possible with felt; but this felt is of a lighter colour, and it almost conceals the granulation, excepting 3 or 4 lines of granulation on the lower outer surface of the hands: the felt also obscures, though it does not conceal, the areolation of the carapace, owing to the lobules being less convex.

Unlike *A. tomentosa* the upper surface of the wrist and hand are nodular (as well as granular), and the fingers are long and pointed, without any hollowing of the tip.

In other respects this species closely resembles the preceding.

One specimen from Mergui.

65. *Actæa hirsutissima* (Rüppell), De Haan, Dana.

Xantho hirsutissimus, Ruppell, 24 Krabben roth. Meer, p. 26, pl. v. fig. 6: Milne Edwards, Hist. Nat. Crust. I. p. 389.

Actæa hirsutissima, De Haan, Faun. Japon. Crust. p. 18: Dana, U. S. Expl. Exp. Crust. pt. I. p. 164: Heller, SB. Ak. Wien, XLIII. 1861, p. 314; and Novara Crust. p. 9: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 263, and IX. 1873, p. 191: Kossmann, Reise roth. Meer., Crust. p. 23: Targioni Tozzetti, Magenta Crost. p. 37, pl. iii. fig. 26: Richters in Möbius, Meeresf. Maurit. p. 145: de Man, Notes Leyden Mus. II. 1880, p. 173, and III. 1881, p. 96: Cano, Boll. Soc. Nat. Napoli, III. 1889, p. 189: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 453.

Length of carapace = $\frac{3}{4}$ breadth.

Carapace of much the same proportions and outline as *A. tomentosa*, but the frontal outline is more convex, and the postero-lateral borders are a little less concave.

The surface of the carapace is very completely areolated by deep smooth grooves, the lobules being exceedingly numerous, strongly convex, and closely covered with pearly granules; and between and around the bases of the granules are many short black bristles which do not form a coat or conceal the texture of the carapace.

The exposed surfaces of the chelipeds and legs are granular and bristly, like the carapace; and the carpal joints, and to a less extent the propodites are dimpled, but not distinctly nodular, above.

Under surface of carapace granular, hairy, and furrowed by grooves continued from fissures that subdivide the antero-lateral borders into four shallow lobes. The surfaces of the external maxillipeds and distal abdominal terga are bristly, those of the sternum and proximal abdominal terga are hairy.

Fingers bluntly pointed but not hollow at tip.

Colours in spirit, yellowish, fingers and greater part of hand black.

In the Indian Museum are a specimen from Samoa, a specimen without locality, and a specimen from the Andamans or Nicobars.

66. *Actæa rufopunctata*, (Edw.) Heller.

Xantho rufopunctatus, Milne Edwards, Hist. Nat. Crust. I. 389: Lucas, Expl. Sci. Algerie, Anim. Artic. p. 11, pl. ii. fig. 1: A. Milne Edwards in Maillard's l'ile Réunion Annexe F, p. 4.

Actæa rufopunctata, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 268, pl. xviii. figs. 1, 1a: Richters in Möbius Meeresf. Maurit. p. 145: de Man, Notes Leyden Mus. II. 1880, p. 172 and III. 1881, p. 96: Miers, P. Z. S. 1881, pp. 63, 68; and Zool. H. M. S. Alert, pp. 517, 528; and Challenger Brachyura, p. 122: Carus, Prodr. Faun. Medit. I. p. 513: R. I. Pocock, Ann. Mag. Nat. Hist. (6) V. 1890, p. 75: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 357: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 454; and in Semon's Forschungsr. (Jena. Denk. VIII.) Crust. p. 50.

Actæa nodosa, Stimpson, Ann. Lyc. Nat. Hist. N. Y. VII. 1862, p. 203; and Bull. Mus. Comp. Zool. II. 138: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 266, pl. xvii. figs. 6-6c; and Exp. Sci. Mex., Crust. p. 245; and Bull. Mus. Comp. Zool. VIII. p. 11: Desbonne and Schramm, Crust. Guadaloupe, p. 25: J. S. Kingsley, Proc. Acad. Philad. XXXI. 1879, p. 393.

Carapace broad, ovoid, its extreme length not quite $\frac{3}{4}$ but more than $\frac{2}{3}$ its extreme breadth: its surface is broken, by deep and broad grooves, into numerous (about 27 excluding those round the orbits and the front) very convex lobules, which are covered very closely with large vesiculous granules; the grooves are filled with a dense short

felt—with longer hairs sometimes interspersed—against which the lobules stand out like islands. (Occasionally there are some tufts of long hair on the edge of some of the lobules).

The exposed (dorsal) surfaces of the carpal and propodal joints of the chelipeds and legs are lobulated in the same style as the carapace, the lobules being granular and being isolated by deep felted grooves.

The front is strongly deflexed, but somewhat prominent, and is rather sharply bilobed. The tumid supra-orbital margin is broken by two cross grooves, and is separated from the lower margin of the orbit by a fissure. The antero-lateral borders are cut into four rounded lobules of nearly equal size, by deepish fissures. Postero-lateral borders not appreciably shorter than the antero-lateral, and little concave.

The parts seen on the under surface are not conspicuously granular or hairy.

The basal antennal joint has its outer angle almost in contact with the inner angle of the lower edge of the orbit.

The edges of the legs (especially the upper edge) are fringed with coarse hair—as also of the arm.

The lower outer surface of the hand has the granules arranged in lines, as is the case with most species of *Actæa*. Fingers blunt-pointed, hollowed out at tip.

Colours of well-preserved spirit specimens, yellow with the convexities of some of the lobules orange-red; the felt in the grooves brown; fingers dark brown with white tips.

Five specimens from Ceylon, up to 34 fms., and four from the Andamans, up to 36 fms.

67. *Actæa speciosa* (Dana), Ortmann.

Actæodes speciosus, Dana, U. S. Expl. Exp. Crust. pt. I. p. 198, pl. xi. figs. 4a–c: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 32.

Actæa speciosa, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 274: Ortmann, Zool. Jahrb. Syst. VII, 1893-94, p. 455.

Actæodes nodipes, Heller, Abhandl. zool.-bot. Ges. Wien, XI. 1861, p. 9, and SB. Ak. Wien, XLIII. 1861, p. 329, pl. ii. fig. 19, and Novara Crust. p. 17: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 274: de Man, Notes Leyden Mus. II. 1880, p. 172.

? Psaumis glabra, Kossmann, Reise roth. Meer., Crust. p. 27, pl. i. fig. 4.

This species has a general resemblance to *A. rufopunctata*, but the carapace is relatively longer and narrower, its lobulation is much less complete and bold, and it is devoid of hairs.

Length of carapace = $\frac{3}{4}$ the breadth.

Surface of carapace broken up by shallow grooves into numerous

lobules, which fall into series that appear to radiate from the midcardiac region. The lobules are closely covered with miliary granules, they are nowhere very convex, and on the posterior third of the carapace they are indistinct. Although the carapace looks quite bare to the naked eye, yet its whole surface—both between the granules and in the grooves between the lobules—is covered with a fine, extremely short and inconspicuous felt.

The exposed surfaces of the carpal and propodal joints of the legs and chelipeds (except the lower outer surface of the hand, which is granular in lines) has exactly the same style of sculpture and texture as the antero-lateral part of the carapace.

Two fissures in the upper edge of the orbit, but none between this and the lower edge of the orbit.

Antero-lateral borders four-lobed,—the lobes subequal and shallow. Postero-lateral borders distinctly shorter than the antero-lateral and distinctly concave.

The basal antennal joint falls far short of the inner angle of the floor of the orbit.

Edges of legs and chelipeds quite free from hair.

Fingers pointed, very slightly hollowed at tip.

Colours in spirit, yellow.

3 specimens from the Persian Gulf, Ceylon, and Andamans are in the Indian Museum.

68. *Actæa ruppellii* (Krauss) Hilgendorf.

Aegle ruppellii, Krauss, Südafr. Crust. p. 28, pl. i. fig. 1. 1843.

Actæa ruppellii, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 270: Hilgendorf in v. d. Decken's Reisen Ost Afr. III. i. p. 73, and MB. Ak. Berl. 1878, p. 787: Miers, Ann. Mag. Nat. Hist. (5) V. 1880, p. 232, and Zool. H. M. S. Alert, pp. 183, 209: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1886-90, p. 109: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 358: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 454: de Man, Zool. Jahrb., Syst., VIII. 1894-5, p. 499.

Aegle rugata, Adams and White, Samarang Crust. p. 43, pl. viii. fig. 5.

Actaea rugata, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 269, and IX. 1873, p. 192: R. Etheridge jr., Mem. Austral. Mus. No. 2, 1889, pp. 33, 35: de Man, Notes Leyden Mus. XIII. 1891, p. 1, and in Weber's Zool. Ergebn. Niederl. Ost-Ind. II. 1892, p. 277: Whitelegge, Mem. Austral. Mus. III. 1897, p. 129.

Actæa rufopunctata, de Man (*nec* Edw.) Archiv. fur Naturges. LIII. 1887, i. p. 261, and Journ. Linn. Soc., Zool., XXII. 1887-88, p. 26 (see Notes Leyden Mus. XIII. 1891, p. 1).

Carapace $\frac{3}{4}$ as long as broad; it and the exposed surfaces of the legs covered with a shaggy coat—consisting of a sponge-work of short bristles amid which are numerous long silky tangled hairs—which has

to be removed before the sculpture and texture of the carapace can be properly made out.

On the denuded carapace the lobules are numerous, are arranged in series which appear to radiate from the cardiac region, and are somewhat indistinct quite posteriorly, but are elsewhere distinct, moderately convex, and separated by broad smooth furrows.

Front obliquely deflexed, rather sharply bilobed. Supra-orbital margin moderately tumid, narrow, cut by two fissures and separated from the lower edge of the orbit by a fissure. Antero-lateral borders four-festooned, the first and last lobes much smaller than the others. Postero-lateral borders shorter than the antero-lateral, moderately concave.

Exposed (dorsal) surfaces of the chelipeds and legs granular and shaggy: the wrist and upper surface of the hand are also subnodular, but the corresponding joints of the legs are but indistinctly grooved. Lower outer surface of hand with granules in lines that are not so definite as usual. Fingers blunt-pointed, slightly hollowed at tip.

Basal antennal joint broad: it falls short of the inner angle of the orbit.

Colours in spirit yellow, fingers dark brown with white tips: in some specimens faint orange-red spots exist on some of the lobules of the carapace.

Carapace markedly more convex in the female than in the male.

In the Indian Museum are 30 specimens from Malacca Str., Andamans, Mergui, Ceylon, and Persian Gulf.

69. *? Actæa obesa*, A. Milne Edwards.

Actæa obesa, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 272, pl. xvii. figs. 2–2*b*.

This species, if my identification be correct, differs from *Actæa ruppellii*, which it closely resembles, in the following characters:—

(1) the carapace and legs are not shaggy, and though they bear some hairs these do not in any way conceal the texture of the carapace:

(2) the lobulation is quite absent from the posterior third of the carapace; and elsewhere though quite distinguishable, is extremely faint, owing to the fineness of the grooves:

(3) the entire surface of the carapace—grooves as well as lobules—is covered with crisp granules, which are largest in the middle of the branchial regions:

(4) the lobulation of the antero-lateral borders, though distinguishable, is extremely indistinct, especially in the case of the first lobe:

(5) the postero-lateral borders are more concave:

(6) the dorsal surfaces of the chelipeds and legs are crisply granular, but the carpal joints show almost no dimpling and the propodal joints none at all.

In the Indian Museum are 2 specimens from the Malacca Straits and one from Bombay.

70. ? *Actæa pulchella*, A. Milne Edwards.

Actæa pulchella, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 273, pl. xvii. figs. 5-5*b*.

? *Actæodes modestus*, de Man, Archiv. für Naturges. LIII. 1887, i. p. 257, pl. ix. fig. 3.

This species, if my identification be correct, resembles *Actæa ruppellii* and *obesa*, but has the following differential characters:—

(1) the carapace is altogether less convex:

(2) the lobulation of the carapace is defective posteriorly, and is faint anteriorly owing to the fineness of the grooves:

(3) the entire surface of the carapace and dorsal surface of legs and chelipeds is covered (though not crowded) with crisp granules, most of which carry a short bristle—but these bristles are not close enough to form a coat:

(4) the antero-lateral borders are sharply granular, but their lobulation is very indistinct:

(5) except for a furrow across the wrist parallel with the articulation of the hand, the sharply granular surface of the chelipeds and legs is unbroken.

In the Indian Museum are three specimens from Mergui, the Andamans, and Ceylon.

71. *Actæa parvula*, (De Haan), de Man.

Menippe parvulus, De Haan, Faun. Japon. Crust. p. 21: Kranss, Sudafr. Crust. p. 34, pl. ii. fig. 2.

Actæa parvula, de Man, Journ. Linn. Soc., Zool., XX. 1887-88, p. 27.

Carapace more than $\frac{3}{4}$ as long as broad, with the posterior third or more *depressed, perfectly flat*, and almost or quite devoid of areolation; its surface is everywhere covered with vesiculous granules, which become very small posteriorly, and with a fine short velvety hair: the areolation is fairly profuse and quite distinct in the anterior two-thirds.

Antero-lateral borders divided into four granular lobes: postero-lateral borders less convergent than in any other species of *Actæa*, giving the flattened posterior part of the carapace a most abnormal look

for an *Actæa*. Front deeply cleft into two round-pointed lobules. The three grooves near the outer angle of the orbit are fairly distinct.

Upper and outer surface of wrist and hand covered with pearly granules and velvet: fingers pointed, not hollowed at tip.

The exposed parts of the dorsal surface of the legs are also covered with velvet which conceals their sharply granular sculpture. Last pair of legs rather short.

Colours in spirit yellow or brownish, fingers brown.

In the Indian Museum are 3 specimens, from the Andamans and Mergui.

This species may be distinguished from all its congeners by the very moderate difference between the two diameters of the carapace, which also has its posterior part quite flat.

72. *Actæa cavipes*, (Dana), A. Milne Edwards.

Actæodes cavipes, Dana, Proc. Acad. Nat. Sci. Philad., 1852, p. 78, and U. S. Expl. Exp., Crust. pt. I. p. 199, pl. xi. figs. 5*a*–*b*.

Actæa cavipes, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 280, and IX. 1873, p. 193: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 456, and in Semon's Zool. Forschungsr. (Jena. Denk. VIII) Crust. p. 50.

Carapace about $\frac{4}{5}$ as long as broad, completely lobulated, the lobules being covered with miliary granules and being separated by broad but not very deep grooves: the posterior part of the carapace sometimes has a worm-eaten appearance.

Front obliquely deflexed, with a cupid's-bow-shaped edge, hardly projecting beyond the prominent inner angle of the lower edge of the orbit. Orbital margin unfissured and unbroken. Antero-lateral borders 4, or indistinctly 5, lobed, the lobes granular and uneven, but not pitted. Postero-lateral borders very much shorter than the antero-lateral, concave.

Outer surface of wrist with numerous pits and craters, upper outer surface of hand worm-eaten.

The upper edges of the carpal and propodal joints of the legs have each a double longitudinal crest, and in every joint the ends of the crests meet so as to leave a trough-like space between them.

The basal antennal joint almost touches the inner angle of the orbit.

Fingers long, pointed, slightly hollow at tip.

In the Indian Museum are four specimens from the Andamans, Mekrán Coast, and Persian Gulf (besides specimens from Upolu and Mauritius).

73. *Actæa fossulata* (Girard) A. M. Edw.

Cancer fossulatus, Girard, Ann. Soc. Entom. France (3) VII. 1859, p. 149, pl. iv. figs. 2–2*b*.

Actæa schmardæ, Heller, Abh. zool.-bot. Ges. Wien, 1861, p. 6 and SB. Ak. Wien, XLIII. 1861, p. 318, pl. i. fig. 13.

Actæa fossulata, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 279, and IV. 1868, p. 71: Richters in Möbius Meeresf. Maurit. p. 145.

Psaumis fossulata, Kossmann, Reise roth. Meer., Crust. p. 27, pl. i. fig 3.

Closely resembles *Actæa cavipes*, but has the following difference:—

(1) the front projects far beyond the inner angle of the orbit:

(2) the lobes of the carapace have their convexity distinct but boundaries somewhat indistinct; and in addition to being granular, they are deeply pitted, and this gives the whole carapace a worm-eaten look:

(3) the antero-lateral borders are four-lobed, but the first lobe is very indistinct, and the lobes are marked with rather large pits:

(4) the upper edge of the hand is bluntly crested and the neighbouring surface is pitted rather than eroded:

(5) the crest of the carpal joints of the legs do not only meet at their ends, but are also more or less completely joined across the middle by dissepiments, so that instead of enclosing a single trough they form at least two irregular cup-like cavities.

In the Indian Museum are two specimens from Great Coco I. (Andamans), and East I., Andamans.

74. *Actæa nodulosa*, White.

Actæa nodulosa, White, P. Z. S. 1847, p. 224: Ann. Mag. Nat. Hist. (2) II, 1848, p. 224; and Adams and White, Samarang Crust. p. 39, pl. viii. fig. 4: A. Milne Edwards, in Maillard's l'île Réunion, Annexe F, p. 5; and Nouv. Archiv. du Mus. I. 1865, p. 277: Miers, Challenger Brachyura, p. 120: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 356.

Carapace ⅔ as long as broad, much subdivided by smooth well cut grooves into numerous small lobules. These lobules are rather irregularly studded with pearly tubercles and granules, the slight irregularity in size and distribution of which gives the lobules themselves a somewhat irregular look. On several of the lobules of the gastric cardiac and branchial regions are, sometimes, symmetrically disposed tussocks of long coarse whitish hair.

The obliquely deflexed front is sharply four-lobed or four-toothed, the outer lobe on either side (standing at the orbital angle) being small. The beaded supra-orbital margin is broadly fissured twice and is separated from the infra-orbital margin by a fissure. The antero-

lateral borders are sharply four-lobed, each lobe being rasp-like. The postero-lateral borders are a little concave. The posterior border is formed by a row of bead-like granules, in front of which is another row —broken in the middle—of larger beads. The sternum, and the under surface of the carapace as far as the beaded epimeral suture, are covered with vesiculous granules.

Those surfaces of the chelipeds and legs that are exposed in repose are closely and crisply granular, many of the granules being pearl-like or bead-like, and those along the dorsad border being spine-like: the edges of the legs, especially the upper edge, are hairy. The granules on lower outer surface of hand are arranged as usual in lines.

Fingers short, pointed, not hollow at tip.

The basal antennal joint falls far short of the inner angle of the floor of the orbit.

Colours in spirit, white.

In the Indian Museum are 3 specimens from off the Malabar Coast, 28–29 fms., one from the Persian Gulf, and one from the Andamans.

Actæa nodulosa var. *bullifera*.

In this well-marked and very ornamental variety the lobulation of the carapace—both of its surface and of its antero-lateral borders—is as deeply cut, as convex, and as regular as it is in *Actæa rufopunctata*; the tubercles are more of one size, and have a distinct constricted base and a swollen spherical pearl-like top; the front row of pearly granules of the posterior border is unbroken; the front is more bilobed with sinuous edges than four-lobed, and its edge is elegantly denticulated or beaded; and all the parts of the under surface of the body are finely granular, except the sternum, which has a pitted worm-eaten look.

Length of carapace 10 millim., breadth 14·5 millim.

A single female from the Andamans.

75. *Actæa echinus*, n. sp.

Closely resembles *Actæa nodulosa* White, but has the following difference:—

(1) instead of pearly tubercles we find coarse conical tubercles or tooth-like spines with denticulated tops; and on the chelipeds and antero-lateral borders of the carapace are coarse serrated spines:

(2) the front is broadly bilobed, the angles of the lobes being sharp:

(3) the lobulation of the antero-lateral borders is irregular and indistinct:

(4) the legs are thin and compressed, the dorsad border of the carpal and propodal joints forms a serrated crest, and the slightly

granular sculpture of the upper surfaces of these joints and of the meropodites is concealed by a close short spongy growth of hair.

Colours in spirit yellow, fingers brown.

Length of carapace 17·5 millim., breadth 26 millim.

A single male from off the Malabar Coast 29 fms.

This species (?) may perhaps be only a variety of *A. nodulosa*. I have noticed it separately, and have figured it, on account of the resemblance it bears to Herbst's *Cancer polydora* (Krabben III. ii. 33, pl. lii. fig. 2).

76. *Actæa peronii*, (Edw.) Haswell.

Xantho peronii, Milne Edwards, Hist. Nat. Crust. I. 392: Hess, Archiv. für Naturges. XXXI. 1865, i. pp. 133, 171.

Xantho spinosus, Hess, Archiv. für. Nat. XXXI. 1865, pp. 132, 171: de Man, Zool. Jahrb., Syst., II. 1887. pp. 690, 692.

Actæa peronii, Haswell, Cat. Austral. Crust. p. 46: Miers, Challenger Brachyura, p. 122: de Man, Zool. Jahrb. Syst., II. 1887, pp. 690, 692: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 357.

? Chlorodius polyacanthus, Heller, Abh. zool.-bot. Ges. Wien, 1861, p. 11; SB. Ak. Wien, XLIII. 1861, p. 339, pl. ii. fig. 21.

Carapace $\frac{2}{3}$ as long as broad, only moderately convex, the lobulation distinct but not convex, covered with strongly convex well-isolated smooth polished tubercles, which are largest on the branchial regions and are smallest posteriorly, where also they become somewhat squamiform. On the antero-lateral borders are four (excluding a tubercle of the supra-orbital series) large tubercles, much similar to those on the branchial regions, but more prominent (almost stalked) and with larger tops (almost pisiform).

Exposed surfaces of wrist and hand covered with tubercles much like those of the branchial regions, but more prominent: on the lower outer surface of the hand they become almost squamiform: a few tubercles at the distal inner corner of the arm.

Exposed surfaces of carpal and propodal joints of legs covered with stout thorns: smaller thorns on upper edge of meropodites, and still smaller ones on surface of dactyli except on the claw.

Front broadly bilobed: each lobe with an **S**-shaped curve to the edge and with the outer angle pronounced.

Fingers short, blunt pointed, hardly hollow at tip.

The basal antennal joint stops far short of the inner angle of the floor of the orbit.

Colours in spirit light yellow, fingers dark brown.

In the Indian Museum are 3 specimens from Australia but none from India. It is included here on the authority of Dr. J. R. Henderson.

77. *Actæa flosculata*, n. sp.

Nearest to *Actæa acantha*, A. M. E., and *A. hystrix*, Miers.

Characterized by the close investment (carapace, chelipeds and legs) of peculiarly ornamental fungiform tubercles which become petaloid at the margins.

Carapace $\frac{3}{4}$ as long as broad, convex; all the regions well defined by conspicuous grooves, and convex; the regions again subdivided into few convex lobules by less conspicuous grooves. The whole carapace, except the broader grooves between the regions, closely covered with very elegant tubercles which have constricted stalk-like bases and thin broad oval or kidney-shaped tops. The exposed surfaces of the chelipeds and legs are covered with ornaments similar to those on the carapace, except at the edges, where they become petaloid.

Front broadly bilobed, the edge of each lobe being deeply cut into four projecting petals. Supra-orbital margin deeply scallopped: antero-lateral borders ornamented like the surface, obscurely lobed: postero-lateral borders about equal in length to the antero-lateral, straight.

The terminal abdominal terga and the sternum of the male pitted and worm-eaten, but with a glazed appearance: under surface of carapace, as far as the epimeral suture, covered with pearly granules.

The basal antennal joint stops far short of the inner angle of the floor of the orbit.

Fingers short, blunt pointed, slightly hollow at tip.

Colours in spirit light yellow, fingers brown with white tips.

In the Indian Museum are two specimens from off Ceylon, 34 fms. and one from off Maldive Is. 28 fms. The carapace of the larger one is 8 millim. long and 12 millim broad.

The ornamentation of this species gives it a strong resemblance to *Chlorodius fragifer* White, with which it may probably prove to be identical.

78. *Actæa granulata* (Audoin).

Cancer granulatus, Savigny and Audouin, Description de l'Egypte, Crust. pl. vi. fig. 2.

Cancer savignyi, Milne Edwards, Hist. Nat. Crust. I. 378.

Cancer (Actæa) granulatus, De Haan, Faun. Japon. Crust. p. 47.

Actæa carcharias, White, P. Z. S. 1847, p. 224, Ann. Mag. Nat. Hist. (2) II. 1848, p. 284: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 276.

Actæa pura, Stimpson, Proc. Acad. Nat. Sci. Philad. 1858, p. 32.

Actæa granulata, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 275, and IX. 1873, p. 192: Miers, Cat. Crust. New Zealand, p. 16; and P. Z. S. 1879, pp. 20, 30; and Challenger Brachyura, p. 120: Haswell, Cat. Austral. Crust. p. 44:

Filhol, Crust. New Zealand, p. 373: J. R. Henderson, Trans. Linn. Soc., Zool. (2) V. 1893, p. 356: Ortmann, Zool. Jahrb., Syst. VII. 1893-94, p. 455.

Actæa Savignii, Kossmann, Reise roth. Meer., Crust. p. 25: Hilgendorf, MB. Ak. Berl. 1878, p. 787: Cano, Boll. Soc. Nat. Napol. III. 1889, p. 189.

Carapace nearly $\frac{7}{8}$ as long as broad, of a mulberry-like appearance, owing to its entire surface being covered with rough tubercles in the closest possible contact with one another by the base. Each individual tubercle again has a mulberry-like appearance, since it is formed of a number of facetted granules confluent by their bases.

The lobulation of the carapace is very complete, but is almost lost in the polygonal mosaic of tubercles.

The 4-lobulation of the antero-lateral borders is inconspicuous.

The postero-lateral borders are shorter than the antero-lateral, and are markedly concave.

Front sharply bilobed, the lobes projecting far beyond the well pronounced orbital angle. Orbital margin with three closed sutures.

The exposed surfaces of the chelipeds are covered with the same strong many-facetted tubercles as the carapace; but on the legs the tubercles have sharper points and are many of them spiny, especially those on the dactyli.

The abdominal terga and the greater part of the sternum are covered with a mosaic of smooth-worn tubercles: the under wall of the carapace, as far as the epimeral suture, is granular.

Fingers short, blunt pointed, hardly hollow at tip.

Basal antennal joint prolonged between front and orbit almost to the inner angle of the orbit, very much as in *Carpilius* etc.

Colour in spirit light reddish brown, fingers black with white tips: in life the colour is uniform purplish black.

In the Indian Museum are 10 specimens from the Persian Gulf, Karáchi, Pedro Shoal, Ceylon, Ganjam Coast, Mergui, and Malacca (besides 14 specimens from Australia and Hongkong).

79. *Actæa calculosa*, (Edw.) A. M. Edw.

Cancer calculosus, Milne Edwards, Hist. Nat. Crust. I. 378.

Actæa calculosa, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 276, pl. xviii. figs. 3-3*a*: Haswell, Cat. Austral. Crust. p. 45: J. R. Henderson, Trans. Linn. Soc., Zool. (2) V. 1893, p. 356.

Not very easily distinguishable from *Actæa granulata* at first sight, but the following difference is constant:—

(1) the carapace is shorter and broader, its length being only about two-thirds its breadth:

(2) the tubercles of the carapace and chelipeds are much smoother

and are hardly facetted, owing to the granules of which they are formed being more intimately confluent; and on the posterior part of the carapace the tubercles themselves are confluent, small, and little convex: the tubercles of the legs are never spiny:

(3) the regions and lobules of the carapace are much more distinctly delimited, and the 4-lobulation of the antero-lateral borders is more distinct.

Colours in spirit much as in *A. granulata*.

In the Indian Museum are 8 specimens from the Persian Gulf, Karáchi, and Mergui.

Banareia, A. Milne Edwards.

Banareia, A. Milne Edwards, Ann. Soc. Entomol. France (4) IX. 1869, p. 168, and Nouv. Archiv. du Mus. IX. 1873, p. 193.

Strongly resembles *Actæa* in all points but has the following difference:—

(1) in the fore edge of the buccal cavern is, on either side, a deep gap, not a mere suture or fissure such as is seen in some species of *Actæa*:

(2) the fingers are compressed and extremely trenchant, resembling shears.

80. *Banareia armata*, A. Milne Edwards.

Banareia armata, A. Milne Edwards, Ann. Soc. Ent. Fr. (4) IX. 1869, p. 168, pl. viii; and Nouv. Archiv. du Mus. IX. 1873, p. 193: Ortmann, Zool. Jahrb., Syst., VII. 1893, p. 456: de Man, Jahrb. Hamb. Wiss. Anst. XIII. (Brachyuren des Hamb. u. Paris Mus.) 1896, p. 75.

Outwardly, from the dorsal view, might almost be mistaken for *Actæa ruppellii*.

All exposed parts of the carapace and appendages, except the fingers and lower outer surface of the hand are concealed by a dark shaggy covering consisting of a dense under-fur with numerous tufts of long hair.

The carapace is a little more than $\frac{2}{3}$ as long as broad, and when denuded, is seen to be divided into very numerous small lobules by broad smooth grooves. The lobules are convex and closely covered with pearly granules.

The front is formed of two small pointed lobes which do not break beyond the common curve of the antero-lateral borders: the supra-orbital border is fissured twice, and is separated from the lower border of the orbit by a fissure: the antero-lateral borders, when denuded, are seen to be divided into four granular lobes of unequal size, and a

(fifth) granular tubercle exists just behind the orbit: the postero-lateral borders are very distinctly concave, and are much shorter than the antero-lateral borders.

The outer surface of the wrist, when denuded, has much the same sculpture as the carapace. An oblique patch of the lower outer surface of the hand is smooth and polished and quite devoid of hair, as are the fingers except the basal half of the upper edge of the dactylus. The upper outer surface of the hand, when denuded, shows about six longitudinal lines of granules, the three upper of which are a little diffuse.

The fingers are compressed and trenchant, resembling shears: the cutting edge of the dactylus is entire, but that of the thumb has three incisiform teeth of unequal size at the base. In marked contrast to all other parts, the fingers are smooth and polished.

In the Indian Museum are 3 specimens from the Andamans.

It appears to me to be quite consistent at present to separate this species from *Actæa* while uniting *Actæodes* with that genus, for the good reason that in this case there are no known transitional forms.

Daira, De Haan.

Daira, De Haan, Faun. Japon. Crust. p. 18.
Lagostoma, Milne Edwards, Hist. Nat. Crust. I. 387.
Daira, Dana, U. S. Expl. Exp. Crust. pt. I. p. 202.
Daira, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 297; and Miss. Sci. Mex., Crust. p. 248.

Carapace broad, strongly convex in both directions, the regions well delimited and subdivided into very numerous convex lentil-like lobules; its antero-lateral borders strongly arched, crenulate; its postero-lateral borders concave, very short.

Front deflexed, two-lobed—the lobes being conspicuous and prominent.

Orbital margin thickened and smoothly crenulate; a strong suture line in the lower margin. Eyes on short thick sub-globular stalks.

Antennules folding obliquely owing to the large size of the basal joint: interantennulary septum broad.

Basal antennal joint hardly touching the front, the next joint and the very short flagellum wedged in the gap between the orbit and the front.

Merus of the external maxillipeds with a wide and deep notch in the anterior margin.

The chelipeds are unequal in both sexes; the fingers are blunt-pointed and hollowed-out at tip.

Upper edge of merus of chelipeds and legs crest-like and elegantly serrated, upper edge of the succeeding joints of the legs with a crest of stout sharp spines; but all this ornamentation is concealed by a broad thick fringe of long coarse hair.

Abdomen of male with all seven joints distinct, but the 3rd–5th segments are not movable on one another.

On either side of the endostome is an oblique septum defining the efferent branchial canal, but this septum extends only about half-way across the palate.

81. *Daira perlata*, (Herbst) De Haan.

Cancer perlatus, Herbst, Krabben, I. ii. 265, pl. xxi, fig. 122.
Cancer daira, Herbst, Krabben, III. ii. 6, pl. liii. fig. 2.
Cancer variolosus, Fabricius, Ent. Syst. Suppl., p. 338.
Daira perlata, De Haan, Faun. Japon. Crust. p. 18.
Lagostoma perlata, Milne Edwards, Hist. Nat. Crust. I. 387.
Daira variolosa, Dana, U. S. Expl. Exp. Crust. pt. I. p. 202, pl. x. figs. 4*a-d*.
Daira perlata, Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 32: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 298; and IX. 1873, p. 196: Heller, Novara Crust. p. 18: Miers, Cat. Crust. New Zealand, p. 18; and Phil. Trans. Vol. 168, 1879, p. 487: Richters, in Möbius Meeresf, Maurit. p. 147: Filhol, Crust. New Zealand, p. 374: R. I. Pocock, Ann. Mag. Nat. Hist. (6) V. 1890, p. 74: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 474; and in Semon's Forschungsr. (Jena. Denk. VIII.) Crust. p. 52: Whitelegge, Mem. III. Austral. Mus., 1897, p. 131.

Carapace oval, strongly convex, subdivided into very numerous polished lentil and pea-shaped lobules which have their surface finely pitted. Antero-lateral borders 11 or 12-crenulate: postero-lateral borders very short, concave.

Upper and outer surface of wrist lobulated almost like the carapace; of hand and dactylus covered with coarse sharp tubercles, which become almost spiniform on the upper edge: upper part of inner surface of wrist and hand covered with a mosaic of flat markings that look like ground-down tubercles: much the same sort of mosaic occurs on the outer surface of the arm and legs, but on the dactyli and propodites of the legs the tubercles are either spiny or acute, and at the distal end of the carpus there is a spine.

Fingers short and thick, with blunt hollowed-out tips, those of the larger cheliped have the cutting-edge toothed, those of the smaller cheliped have a plain sharp cutting-edge.

Lower edge and surface of meropodites of legs much excavated in their distal half to receive the bulging distal end of the carpus in flexion.

Upper edge of legs fringed thickly with coarse long hair which

conceals their serrated and spiny sculpture. Two brushes of hair on the under surface of the dactyli.

Colours in spirit—mottled shades of warm brown.

In the Indian Museum are 11 females and 3 small males from the Laccadive reefs (besides 5 females and 1 small male from Mauritius and 2 females from Samoa).

Subfamily III. Chlorodinæ.

Alliance I. *Xanthodioida.*

Xanthodes, Dana.

Xanthodes, Dana, Proc. Acad. Nat. Sci. Philad. 1852, p. 75; and U. S. Expl Exp. Crust. pt. I. p. 175.

Xanthodes, A. Milne Edwards, Ann. Sci. Nat. Zool. (4) XX. 1863, p. 227; Nouv. Archiv. du Mus. IX. 1873, p. 200; and Miss. Sci. Mex., Crust. p. 259.

Xanthodes, Miers, Challenger Brachyura, p. 127.

[Type *Xanthodes lamarckii* (Edw.)]

Carapace thick but somewhat depressed, moderately broad, somewhat hexagonal, the regions delimited and to a certain extent areolated in the anterior two-thirds.

Fronto-orbital border considerably more than half the greatest width of the carapace in extent.

Front broad (contained about $3\frac{1}{2}$ times in the greatest width of the carapace) bilobed.

Antero-lateral border cut into four lobes or teeth. Orbital margin with the three grooves either fairly distinct, or quite indistinct.

Basal antennal joint broad and very short; the flagellum, which is rather longer than the orbit, lodged in the orbital hiatus.

Anterior edge of merus of external maxillipeds almost transverse.

Chelipeds either equal or unequal in both sexes; the arm in repose is nearly or quite hidden beneath the carapace; fingers pointed, not hollowed at tip.

Legs stoutish, more or less hairy and granular or spiny along the upper border.

Abdomen of the male five-jointed.

Of the two Indian species included in this genus, one (*Xanthodes lamarckii*) has a certain resemblance to *Lioxantho punctatus*, from which it is easily distinguished by the breadth of the fronto-orbital margin; the other (*Xanthodes notatus*) has a strong resemblance to *Phymodius sculptus*, from which it is at once distinguished by the sharp-pointed fingers, not hollow at tip.

Key to the Indian species of Xanthodes.

I. Chelipeds equal, hands and wrists closely granular, outer surface of hand with three deep parallel longitudinal furrows ..... *X. lamarckii.*

II. Chelipeds markedly unequal, hands and wrists, at any rate of the smaller cheliped, studded with sharp spine-like tubercles ..... *X. notatus.*

82. *Xanthodes lamarckii* (Edw.).

Xantho lamarckii, Milne Edwards, Hist. Nat. Crust. I. 391 : A. Milne Edwards, in Maillard's l'ile Réunion, Annexe F, p. 4: Heller, Novara Crust. p. 10 : Ortmann, Zool. Jahrb. Syst. VII. 1893-94, pp. 444, 448.

Xanthodes lamarckii, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 200, pl. vii. fig. 3 : Hilgendorf, MB. Ak. Berl. 1878, p. 789 : Miers, Zool. H. M. S. Alert, pp. 517, 529 : F. Muller, Verh. Ges. Basel, VIII. 1886, p. 474 : de Man, Archiv. für Naturges. LIII. 1887, i. p. 263 ; and in Weber's Zool. Ergebn. Niederl. Ost-Ind. II. 1892, p. 278 ; and Zool. Jahrb. Syst. VIII. 1894-95, p. 513 : Whitelegge, Mem. Austral. Mus. III. 1897, p. 130.

Xanthodes granosomanus, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 75; and U. S. Expl. Exp. Crust. pt. I. p. 175, pl. viii. figs. 10*a*–*c*.

Xantho granosomanus, Heller, Novara Crust. p. 11.

The anterior and antero-lateral parts of the carapace are to a variable extent granular, the posterior part is generally quite smooth.

Fronto-orbital region marked off by a sinuous groove, gastric region well delimited and fairly distinctly divided into 3 sub-regions, branchio-hepatic regions incompletely traversed by 2 grooves proceeding from the 2nd and 3rd intervals of the antero-lateral border : no other grooves on the carapace.

Outer angle of front not very pronounced, separated from the supra-orbital margin by a faintish groove. The grooves of the orbital margin are almost indistinguishable.

Antero-lateral border divided into four broadish granular lobes, the last two of which are more acuminate (but bluntly) than the others.

Chelipeds equal in both sexes, stout, rather short (less than twice the length of the carapace) ; arm hidden beneath the carapace in repose, its anterior and posterior edges hairy, the upper part of its posterior surface granular : upper and outer surfaces of wrists and hands as closely as possible covered with pearly granules, the wrist also has a few indistinct dimples, and the outer surface of the hand is deeply scored by three parallel longitudinal furrows : fingers rather long, pointed.

Upper edge of meropodites of legs very finely serrulate : surfaces of next three joints closely granular in the vicinity of the upper (anterior)

edge: some longish hairs scattered along the upper border of the last four, and also along the ventral (posterior) borders of the last two joints.

Colours in spirit: yellowish white, fingers blackish-brown. In well preserved spirit specimens the legs are banded with bluish green, and large confluent bluish green blotches occur on the carapace.

In the Indian Museum are 15 specimens, from the Andamans, Madras coast and Ceylon, (besides 6 from parts outside India).

83. *Xanthodes notatus*, Dana.

Xanthodes notatus, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 76, and U. S. Expl. Exp. Crust. I. p. 178, pl. viii. figs. 12*a-b*: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 201: Haswell, Cat. Austral. Crust. p. 49: de Man, Archiv. f. Naturges. LIII. 1887, i. p. 264.

Xantho notatus, Heller, Novara Crust. p. 10.

Surface of carapace, except for the characteristic deep cut areolation, quite smooth to the naked eye. Deep well-cut grooves separate the fronto-orbital region, define the gastric region, and subdivide the branchio-hepatic regions into 3 or 4 lobules; and the gastric region is divided into 3 sub-regions by fine but well-cut lines.

Front bilobed, the outer angle of each lobe being well defined and separated from the supra-orbital margin by a notch and groove. The 3 grooves of the orbital border are distinct.

Antero-lateral border cut into 4 teeth, of which the last two are procurved and spine-like.

Chelipeds markedly unequal, the larger one more than twice the length of the carapace: the arm in both is not quite concealed by the carapace, is devoid of hair, and has the distal end of the upper border spinate: in the smaller cheliped, the upper and outer surfaces of the wrist and the upper and a large part of the outer surface of the hand are studded with sharp spine-like tubercles; but in the larger cheliped the tubercles are larger, less numerous, and are low and worn, not spine-like: the fingers are pointed, not hollowed at tip, and in the smaller cheliped are fluted, the ridges of the dactylus having a few sharpish tubercles at the basal end.

The upper edge of the meropodites of the legs is spiny, with a few long fine bristles: the upper borders of the next two joints have each two rows of spines and a good many long bristles, the carpus having also a third row of sharp granules: the dactylus is granular and bristly, and the lower edge also of the propodite has some bristles.

Colours of well-preserved spirit specimens: purplish brown, the purplish tinge very distinct on the chelipeds, the last 3 joints of the legs are greenish.

In the Indian Museum are 17 specimens, from the Andamans, Palk Str. and Ceylon.

This species has a strong likeness to *Phymodius sculptus*.

Alliance II. *Chlorodioida.*

Chlorodius.	Chlorodopsis.
Phymodius.	Cyclodius.

Chlorodius, A. Milne Edwards.

Chlorodius, (part) Milne Edwards, Hist. Nat. Crust. I. 399.

Chlorodius, (part) Dana, Silliman's Amer. Journ. Sci. and Arts (2) XII. 1851, p. 126, and U. S. Expl. Exp. Crust. pt. I. p. 204.

Chlorodius, A. Milne Edwards, Ann. Sci. Nat. Zool. (4) XX. 1863, p. 283; Nouv. Archiv. du Mus. IX. 1873, p. 212; Miss. Sci. Mex., Crust. p. 265.

[Type *Chlorodius niger* (Forsk.)]

Carapace depressed, flat, hexagonal, the regions faintly or not at all demarcated, the surface smooth and almost unbroken, except sometimes on the branchio-hepatic region, near the antero-lateral border, where there may be some broad transverse wrinkles.

Fronto-orbital border more than three-fourths the greatest breadth of the carapace. Front almost straight, faintly emarginate in the middle line, extremely broad (between a third and half the greatest breadth of the carapace), its outer angles separated from the supra-orbital margin by a groove.

Antero-lateral borders cut into four lobes or teeth, the first being in very close approximation to the angle of the orbit. Postero-lateral borders rather longer than the antero-lateral.

Orbit with two suture lines above, and one at the outer angle: eyes on short thick stalks.

Basal antennal joint large, extending upwards and outwards into the gap between the front and the orbit; the flagellum situated in the crevice-like orbital hiatus.

Merus of the external maxillipeds with the anterior border almost transverse.

Chelipeds unequal, long, more than twice the length of the carapace, half or more of the arm projecting beyond the edge of the carapace; fingers large, broadened and deeply hollowed at tip (horse-shoe shaped).

Legs never spiny, though the upper edge of the meropodites may have a few spinules distally, and that of the following joints is sharply granular.

Abdomen of the male consisting of 5 joints, the 3rd–5th somites being fused.

Key to the Indian species of Chlorodius.

I. Carapace with the regions faintly marked, transversely wrinkled near the antero-lateral borders; four distinct teeth (exclusive of the orbital angle) on the antero-lateral border .... *C. niger.*

II. Carapace with a perfectly smooth unbroken surface; first lobe of antero-lateral margin almost obsolete, the third the most distinct of all ..... *C. lævissimus.*

84. *Chlorodius niger* (Forsk.) Rüppell, A. M. Edw.

Cancer niger, Forskal, Descr. Anim. p. 89.

Chlorodius niger, Ruppell, 24 Krabben roth. Meer. p. 20, pl. iv. fig. 7 and pl. vi. fig. 14: Milne Edwards, Hist. Nat. Crust. I. 401: Dana, U. S. Expl. Exp. Crust. pt. I. p. 216, pl. xii. figs. 5a–c: Stimpson, Proc. Ac. Nat. Sci. Phila., 1858, p. 33: Heller, SB. Ak. Wien, XLIII. 1861, i. p. 335, and Novara Crust. p. 18: A. Milne Edwards, Nouv. Archiv. du Mus. IV. 1868, p. 71, and IX. 1873, p. 214: Kossmann, Reise roth. Meer. Crust. p. 34: Miers, Ann. Mag. Nat. Hist. (5) V. 1880, p. 234; and P. Z. S. 1884, pp. 10, 11; and Zool. H. M. S. Alert, pp. 183, 215, 517, 531: de Man, Notes Leyden Mus. II. 1880, p. 174, III. 1881, p. 98, and Archiv. für Naturges. LIII. 1887, i. p. 279, and Journ. Linn. Soc., Zool., XXII. 1887-88, p. 32; and Zool. Jahrb. Syst. VIII. 1894-95, p. 519: Richters in Möbius Meeresf. Maurit. p. 147: Haswell, Cat. Austral. Crust. p. 62: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 361: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 465, and in Semon's Forschungsr. (Jena. Denk. VIII.) Crust. p. 51.

Chlorodius hirtipes, White, P. Z. S. 1848, p. 226; Ann. Mag. Nat. Hist. (2) II. 1848, p. 286; and Adams and White, Samarang Crust. p. 40, pl. xi. fig. 4.

Chlorodius cytherea, Dana, Proc. Ac. Nat. Sci. Phila. 1852, p. 79, and U. S. Expl. Exp. Crust. pt. I. p. 213, pl. xii. figs. 2a–c: Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 33.

Chlorodius nebulosus, Dana, Proc. Ac. Nat. Sci. Phila. 1852, p. 80, and U. S. Expl. Exp. Crust. pt. I. p. 214, pl. xii. fig. 3.

Chlorodius depressus, Heller, Abh. zool.-bot. Ges. Wien, 1861, p. 11; and SB. Ak. Wien, XLIII. 1861, p. 338: Hilgendorf in v. d. Decken's Reisen Ost-Afr. III. i. p. 74.

Carapace hexagonal, depressed: gastric region delimited by faint grooves and subdivided into from 3 to 5 indistinct areolæ by still fainter grooves; anterior part of branchio-hepatic region, just inside the antero-lateral margin, with one or two low broad transverse wrinkles: the surface of the carapace quite smooth (non-granular).

First lobe of the antero-lateral border small, almost confluent with the rounded external orbital angle; last two lobes usually ending in procurved spine-like points.

Chelipeds, in both sexes, twice or more the length of the carapace, usually quite smooth to the naked eye; a tubercle or spine on the anterior edge, and a little crenulation (not always present) on the posterior edge of the arm; inner angle of wrist strongly pronounced; fingers stout, a good deal arched, markedly spoon-like at tip.

Legs with a good deal of hair, and long fine bristles interspersed, on the dorsal aspect of the last three joints.

Colours in spirit: yellowish brown to bluish or purplish brown, sometimes mottled; fingers black.

In the Indian Museum are 64 specimens, from the Andamans, Nicobars, Mergui, and Mekrán coast, (besides 52 from other parts of the Indo-Pacific).

85. *Chlorodius lævissimus*, Dana.

Chlorodius lævissimus, Dana, Proc. Ac. Nat. Sci. Phila. 1852, p. 80, and U. S. Expl. Exp. Crust. pt. 1. p. 215, pl. xii. figs. 4*a-g*.

Carapace hexagonal, a little tumid, its surface perfectly smooth without trace of regions or areolæ.

First lobe of antero-lateral border almost obsolete, last tooth very small, the third tooth much the largest and most prominent.

Anterior edge of arm without a spine.

Last three joints of the legs with a few scattered long fine bristles—no hair.

Fingers very strongly arched, a character which—as Dana has noticed—at once distinguishes this little species from the young of *Chlorodius niger*, which it otherwise closely resembles.

Colours in spirit, white, fingers brown.

In the Indian Museum are 9 specimens, from the Andamans and Ceylon, (and 1 from Mauritius).

Phymodius, A. Milne Edwards.

Chlorodius, (part) Milne Edwards, Hist. Nat. Crust. I. 399: Dana. U. S. Expl Exp. Crust. pt. I. p. 204.

Phymodius, A. Milne Edwards, Ann. Sci. Nat., Zool. (4) XX. 1863, p. 233; and Nouv. Archiv. du Mus. IX. 1873, p. 217; and Miss. Sci. Mex. Crust. p. 266.

Phymodius, Miers, Challenger Brachyura, p. 139.

Carapace moderately flat, hexagonal, all the regions well delimited, and broken up into numerous convex areolæ which have a smooth bare surface.

Fronto-orbital border not quite two-thirds the greatest breadth of the carapace. Front distinctly bilobed, with the outer angle of each lobe forming a distinct little lobule; its breadth is about a third the greatest breadth of the carapace. Orbital margin with 2 grooves above and one at the outer angle: eyes on short thick stalks.

Antero-lateral borders cut into four lobes or teeth: postero-lateral border nearly equal in length to the antero-lateral.

Basal antennal joint large, extending outwards and upwards into the gap between the front and the orbit; the flagellum situated in the orbital hiatus.

Anterior edge of merus of external maxillipeds almost transverse.

Chelipeds unequal, twice or more the length of the carapace, about half the arm projecting beyond the edge of the carapace: fingers large, strongly arched, broadened and deeply hollowed at tip.

Legs with the meropodite carpopodite and propodite sharply spinous along their upper border.

Abdomen of the male five-jointed.

Phymodius is distinguished from *Chlorodius* by the extensive and distinct areolation of the carapace, by the narrower front, and by the spiny armature of the dorsal border of the legs.

Key to the Indian species of Phymodius.

I. Lobules of carapace smooth but dull; chelipeds rough with nodules or tubercles; legs with scattered hairs that do not hide the spines:—
   i. Sculpture of carapace sharp cut; chelipeds with postule-like tubercles extending as far as fingers. *P. ungulatus.*
   ii. Sculpture of carapace worn; chelipeds with irregular nodules that do not usually reach more than halfway along the hand .. .. *P. monticulosus.*

II. Lobules of carapace smooth and polished, as also are the chelipeds; legs with a stiff fringe of hair along the anterior border concealing the spines there .... *P. sculptus.*

86. *Phymodius ungulatus* (Edw.) A. M. Edw.

Chlorodius ungulatus, Milne Edwards, Hist. Nat. Crust. I. 400, pl. xvi. figs. 6–8: Dana, U. S. Expl. Exp. Crust. pt. I. p. 205, pl. xi. figs. 8*a–b*: Hess, Archiv. für Naturges. XXXI. 1865, pt. i. pp. 135, 171: Streets, Bull. U. S. Nat. Mus. VII. 1877, p. 105.

Phymodius ungulatus, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 218: Hilgendorf, MB. Ak. Berl. 1878, p. 790: Kossmann, Reise roth. Meer. Crust. p. 34: Haswell, Cat. Austral. Crust. p. 59: Miers, Challenger Brachyura, p. 139: Cano, Boll. Soc. Nat. Napol. III. 1889, p. 201: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 362: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 464: de Man, Zool. Jahrb. Syst. VIII. 1894-95, p. 524.

? Xantho de Haanii, Krauss, Sudafr. Crust. p. 29, pl. i. fig. 2: Heller, SB. Ak. Wien, XLIII. 1861, p. 337, and Novara Crust. p. 19.

Chlorodius areolatus, Adams and White, Samarang Crust. p. 41, pl. xi. fig. 3.

The regions and numerous sub-regions of the carapace are all convex and sharply defined by clean-cut furrows; their surface is smooth but dull, owing to close microscopic granulation.

Front bilobed, the outer angle in each lobe forming a distinct little lobule.

The four teeth of the antero-lateral border are sharply conical.

Chelipeds unequal, but not greatly so, very finely granular; arm with the anterior border rather strongly serrated, and with numerous pustule-like tubercles along the posterior border; upper and outer surface of wrist, and upper as well as a small part of inner and a larger part of outer surface of hand, covered with well-spaced pustule-like tubercles, those on the outer surface of the hand being in longitudinal series; inner angle of wrist strongly pronounced, with bifid tip.

Legs with finely granular surface, sharply granular on the dorsal aspect, where there are some long scattered hairs: upper edge of meropodites with 1 row of spinules, upper border of carpopodites with 3 rows, of propodites with 2 rows.

Colours in spirit, yellowish brown, or greenish; fingers black.

In the Indian Museum are 12 specimens, from the Andamans and Ceylon, (as well as 19, from Mauritius and Samoa).

87. *Phymodius monticulosus* (Dana), A. M. Edw.

Chlorodius monticulosus, Dana, Proc. Ac. Nat. Sci. Phila. 1852, p. 79; and U. S. Expl. Exp. Crust. pt. I. p. 206, pl. xi. figs. 9*a-f*: Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 34.

Chlorodius obscurus, Lucas in Jacquinot's Voyage Astrolabe, Zool. Vol. III. Crust. p. 26, pl. iii. fig. 4.

Phymodius monticulosus, A. Milne Edwards, Nouv. Archiv. du Mus. IV. 1868. p. 71 (name only): Richters in Möbius, Meeresf. Maurit. p. 148: Miers, Challenger Brachyura, p. 139: Muller, Verh. Ges. Basel, VIII. 1886, p. 474: Cano, Boll. Soc. Nat. Napoli, III. 1889, p. 201: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 363: de Man, Zool Jahrb., Syst. VIII. 1894-95, p. 524: T. Whitelegge, Mem. Austral. Mus. III. 1897, p. 136.

Phymodius obscurus, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 220: (?) de Man, Notes Leyden Mus. II. 1880, p. 174: Richters in Möbius, Meeresf. Maurit. p. 148.

Closely resembles *P. ungulatus*, but is at once distinguished by the more convex arch of the front and antero-lateral borders, by the greater dorsal convexity of the carapace, by the "worn" look of the sculpture of the carapace, and by the much less rough hands.

Carapace thick, and distinctly convex in its anterior two-thirds; the regions and subregions are all distinct and convex, but the depressions that separate them are broad and not sharp cut, and this gives the sculpture a worn or moulded appearance.

Front bilobed, the outer angle of each lobe well defined.

The four teeth of the antero-lateral margin are blunt and rounded the first two being very much worn.

Chelipeds unequal—more so than in *P. ungulatus*: arm with two or three coarse denticles on the anterior border, the posterior border being rugose; upper and outer surface of wrist nodular; a certain part of the upper, as well as of the inner and (more so) of the outer surfaces of the hand nodular, but except in very young specimens, the nodules do not extend beyond, and often not so far as, halfway along the hand, so that the greater part of the hand is often smooth.

Legs as in *P. ungulatus*, but the spinules are coarser and blunter.

Colours in spirit—dark chestnut brown, sometimes mottled with grey; fingers blackish brown.

In the Indian Museum is a single specimen from the Nicobars (in addition to 21 from Australia, the South Seas, and Mauritius).

88. *Phymodius sculptus*, (A. Milne Edwards).

Chlorodius sculptus, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 217, pl. viii. fig. 4: de Man, Notes Leyden Mus. III. 1881, p. 98; Archiv. für Naturges. LIII. 1887, i. p. 279; and Journ. Linn. Soc., Zool., XXII. 1887-88, p. 32: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 466.

Regions of the carapace well defined and subdivided, by broad and deepish grooves, into smooth, polished, convex but flat-topped lobules: those of the branchio-hepatic regions are disposed transversely: the antero-lateral sub-regions of the gastric area are not longitudinally subdivided.

Front bilobed, the outer angles of each lobe distinct but not very prominent.

The antero-lateral border is cut into four smooth lobes and is rather shorter than the postero-lateral.

The chelipeds are unequal: the arm has several sharp teeth on the anterior border and several pearly tubercles on the distal end of the posterior border, and the inner angle of the wrist is salient; but the surface of the chelipeds is smooth and polished.

The most characteristic feature of the legs is the dense stiff fringe of long greenish-yellow bristles that clothes the anterior border of the last four joints, concealing the sharp spines with which these borders are armed.

Colours in spirit, body and legs green with brownish points, chelipeds brownish, fingers black.

In the Indian Museum are 10 specimens, from the Andamans, Mergui and Ceylon.

Chlorodopsis A. Milne Edwards.

Chlorodopsis, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 227.
? Pilodius, (part) Dana, U. S. Expl. Exp. Crust. pt. I. p. 217.

Carapace flat, more or less hexagonal, the regions well delimited and well areolated, the areolæ being granular or hairy, or both.

Fronto-orbital border about two-thirds the greatest breadth of the carapace. Front bilobed, the outer angle of each lobe usually well defined and forming a distinct little lobule; its breadth is about a third the greatest breadth of the carapace.

Antero-lateral border almost always cut into four teeth. Postero-lateral border commonly a little longer than the antero-lateral.

Orbital border with the three grooves or notches very distinct.

Basal antennal joint large, extending up between the front and the orbit, the outer angle being prolonged into the orbital hiatus.

Anterior edge of merus of external maxillipeds almost transverse.

Chelipeds either unequal or subequal, their length being generally under twice the length of the carapace; the arm short and not projecting very much beyond the carapace.

Fingers strong, arched, broadened and hollowed at tip, but not so hoof-like as *Chlorodius*.

Legs dorsally almost always hairy and spinous.

Abdomen of male 5-jointed.

Chlorodopsis is distinguished from *Chlorodius* and *Phymodius*, (1) by the prolongation into the orbital hiatus of the outer angle of the basal joint of the antenna, and (2) by the granular and hairy or furry carapace.

Key to the Indian species of Chlorodopsis.

I. The entire carapace cut into strongly-convex, isolated areolæ, the surface of which is uniformly covered with pearly granules: the deep smooth grooves between the areolæ, and the spaces between the granules, covered with a dense, dark, extremely short fur ..... *C. areolata.*

II. Only the anterior ⅔ to ¾ of the carapace areolated: three or four of the lobules just inside the antero lateral border either bear spines or are themselves spine-like:—

i. Sculpture of carapace and legs almost concealed by bristles and long hairs:—

1. Posterior fourth of carapace slightly concave; chelipeds rather slender, little unequal, the black colouration of the thumb hardly involves the hand at all:—

a. Antero-lateral margin armed with four large spines (not including the orbital angle) ..... *C. pilummoides.*

b. Antero-lateral margin divided into four blunt spinuliferous lobes ..... *C. nigrocrinita.*

2. Posterior fourth of carapace flat: the antero-lateral margin consists of four lobes each capped by several spinules: chelipeds markedly unequal, the black colouration of the thumb involves the greater part of the lower surface of the hand ..... *C. melanochira.*

ii. Carapace with a few scattered hairs which do not in the least conceal its sculpture. The groove that cuts off the fronto-orbital margin from the rest of the carapace is very distinct:—

1. All four spines of the antero-lateral margin equal, the 2nd and 3rd commonly with an accessory spinule near the tip ..... *C. wood-masoni.*

2. First spine of the antero-lateral margin small or obsolescent; last three spines large, claw-like ..... *C. spinipes.*

89. *Chlorodopsis areolata*, (Edw.) A. M. Edw.

Chlorodius areolatus, Milne Edwards, Hist. Nat. Crust. I. 400: Hess, Archiv. für Naturges. XXXI. 1865, pp. 135, 171.

Chlorodius perlatus, Macleay, Ill. Zool. S. Afr., Annulosa, p. 59: Krauss, Sudafr Crust. p. 31.

Chlorodopsis areolata, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 231, pl. viii. fig. 8: Hilgendorf, MB. Ak. Berl. 1878, p. 790: Richters in Möbius. Meeresf. Maurit. p. 148: Haswell, Cat. Austral. Crust. p. 54: Miers, Zool. H. M. S. Alert, pp. 517, 532: F. Muller. Verh. Ges. Basel, VIII. 1886, p. 474: de Man, Notes Leyden Mus. XII. 1890, p. 54: Ortmann, Zool. Jahrb. VII. 1893-94, p. 470.

Carapace flat, but thick, as completely lobulated as any *Actæa*; the lobules strongly convex, isolated by broad deep smooth channels, their convexities as closely as possible covered with pearly granules, the dividing channels lined by an extremely short dense dark fur, which also extends between but does not cover the granules of the lobules.

The front is deeply and broadly cut into two granular lobes, the outer angle of each of which forms a separate lobule. The three fissures of the orbital margin are so deep as to give a lobed appearance.

The antero-lateral border is divided by broad notches into four rounded granular lobes.

Chelipeds unequal, the longer one about twice the length of the carapace; the upper part of the outer surface of the arm, the nodular or wrinkled surface of the wrist, and the upper and outer surface of the hand are all closely covered with pearly granules, which are largest on the hand: fingers strongly arched, smooth except for some grooving and granulation at base of dactylus.

The exposed surface of the legs is as closely as possible covered with a dense spongy fur from which the tops of numerous conical or subspinous granules peep out: the dorsal edge of the legs is also clothed with a thick shaggy fringe of hair, as also the ventrad edge of the last two joints.

Colours in spirit yellowish brown to blackish brown; fingers black, the colouration extending along the lower border and on to both surfaces of the hand.

In the Indian Museum are 19 specimens, from the Andamans, Nicobars and Ceylon (in addition to 12 specimens from the South Seas and Mauritius).

90. *Chlorodopsis pilumnoides*, (White).

Chlorodius pilumnoides, White, P. Z. S. 1847, p. 226; Ann. Mag. Nat. Hist. (2) II. 1848, p. 286; Adams and White, Samarang Crust. p. 41, pl. ix. fig. 3.

? ? Pilodius pilumnoides, Dana, U. S. Expl. Exp. Crust. pt. I. p. 221, pl. xii. fig. 10*a–c*.

Chlorodopsis pilumnoides, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 34, Archiv. für Naturges. LIII. 1887, i. p. 281: Cano, Boll. Soc. Nat. Napol. III. 1889, p. 204: Ortmann, Zool. Jahrb. VII. 1893-94, p. 470.

Carapace, chelipeds and legs granular, beneath a copious covering of short black bristles among which are scattered numerous long white club-shaped hairs.

Carapace flat, its regions, in the anterior two-thirds, plainly marked and subdivided by broadish shallow furrows, but not convex; its posterior third flat, or even a little concave, between two raised transverse beaded lines.

Front cut rather deeply into two granular or denticulate lobes, the outer angle of each of which forms a little lobule. The three fissures of the granular orbital margin are distinct.

On the antero-lateral margin are four red-tipped claw-like spines not including the orbital angle, the middle two, at least, of which have a pair of spinelets at base: on the carapace just inside either antero-lateral margin is a scattered group of 5 or 6 similar, but rather smaller, spines.

Chelipeds subequal, rather slender, not longer than the legs (less than twice the length of the carapace); both edges of the upper surface of the arm spinulate; numerous spines on the wrist, the one (or two) at the inner angle the largest; rows of spines along upper surface, rows of sharp granules along lower part of outer surface, of hand; fingers strongly fluted, the ridges being sharply and elegantly serrate or spinate.

In the legs, all the edges of the meropodites are more or less spinate and the carpopodites and propodites are dorsally more or less spinulate.

Colours in spirit: yellowish, or mottled green; legs yellowish with purplish-brown cross-bands, or light green with dark green cross-bands; fingers black, the colouration not extending along the hand.

In the Indian Museum are 7 specimens from the Andamans and 1 from Mergui.

91. *? Chlorodopsis nigrocrinita*, (Stimpson).

? Pilodius nigrocrinitus, Stimpson, Proc. Acad. Nat. Sci. Philad. 1858, p. 34.

Differs from *C. pilumnoides* in having the antero-lateral margin cut into 4 blunt lobes which when denuded and examined under a lens are spinuliferous: only the distal end of the upper edge of the arm is spinulate.

Four specimens from the Andamans are in the Indian Museum.

It is at once distinguished from *C. melanochira*, to which it also bears a strong resemblance, by the altogether different form of the chelipeds and fingers. The chelipeds, like those of *C. pilumnoides*, are slender and of equal size, and the black colouration of the fingers does not extend on to the hand.

92. *Chlorodopsis melanochira*, A. M. Edw.

Chlorodopsis melanochira, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 228, pl. viii. fig. 5: Haswell, Cat. Austral. Crust. p. 55: de Man, Archiv. für Naturges. LIII. 1887. i. p. 281, and in Weber's Zool. Ergebn. Niederl. Ost-Ind. II. 1892, p. 278; and Zool. Jahrb. Syst. VIII. 1894-95, p. 520: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 471.

Carapace, chelipeds and legs covered with short black bristles and long yellow hairs, the yellow hairs being sparse on the carapace but exceedingly long and numerous on the legs, and the bristles being embedded each in a curious little white ball of felt.

On the denuded carapace the regions are all well defined and well areolated by well-cut smooth grooves, the convexities of the areolæ being granular: the posterior third or fourth of the carapace forms a flat granular surface.

Front cut into two elegantly denticulated lobes, the outer angle of each of which forms an independent lobule. The three fissures of the finely denticulate orbital margin are distinct.

The antero-lateral margin is divided into four lobes, each of which is crowned with several spinules: two or three of the lobules of the carapace just inside either antero-lateral margin are capped with similar spinules.

The chelipeds are markedly unequal, the larger one being less than twice the length of the carapace. The anterior and posterior edges of the arm are granular; the wrist has the upper and outer surfaces studded with granules and conical spine-like tubercles; similar tubercles and pearly granules stud the upper and more or less of the outer surface of the hand; the finger has a few spinule-like tubercles at base.

The legs have the upper border of the meropodite, carpus, and propodite denticulate.

Colours in spirit; brownish yellow or mottled green, the mottling on the legs forming indistinct cross-bands; fingers black, the colouration involving the greater part of the lower border and both surfaces of the lower outer corner of the hand.

In the Indian Museum are 35 specimens from the Andamans.

This species is at once distinguished from *C. pilumnoides*, (1) by the smaller size, (2) by the better defined areolation of the carapace, (3) by the cap of spinelets—instead of a large claw-like spine—on each of the 4 lobes of the antero-lateral margin, (4) by the marked inequality of the chelipeds, and (5) by the black colouration of the thumb extending far back along the hand.

93. *Chlorodopsis spinipes* (Heller) A. M. Edw.

Pilodius spinipes, Heller, Abh. zool.-bot. Ges. Wien, 1861, p. 11, and SB. Ak. Wien, XLIII. 1861, i. p. 340, pl. ii. fig. 22.

Chlorodopsis spinipes, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 230, pl. viii. fig. 6: de Man, Notes Leyden Mus. III. 1881, p. 98; Archiv. für Naturges. LIII. 1887, i. p. 282; and in Weber's Zool. Ergebn. Niederl. Ost-Ind. II. 1892, p. 278: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 361: Ortmann, Zool. Jahrb. VII. 1893-94, p. 471.

Carapace and chelipeds with a few scattered hairs, legs with numerous long stiff brown and yellow hairs that a good deal conceal the sculpture.

The regions and subregions of the carapace in its anterior $\frac{3}{4}$ are most remarkably well defined by broad smooth deep-cut grooves, and are coarsely and unevenly granular.

The front is cut into two lobes which have their free edge entire or slightly crenulate, and their outer angle isolated and spine-like. The orbital margin is sharp-cut and almost smooth: the 3 fissures are distinct.

The antero-lateral margin is cut into four teeth, of which the first is always small and often obsolescent, while the other three are large, procurved and claw-like. The three or four lobules of the carapace just inside and parallel with the antero-lateral border have the form of salient conical tubercles.

The chelipeds are unequal, the larger one being not quite twice the length of the carapace: the arm has 2 or 3 spines at the distal end of the anterior and posterior borders; the upper and outer surfaces of the wrist and hand are covered with sharp spine-like tubercles which become blunt and pearl-like in the lower part of the hand, and one or two of the spines at the inner angle of the wrist are enlarged; fingers with some sharp tubercles at base.

Legs with numerous long sharp spines (which are a good deal concealed by long stiff hairs) along the upper border,—a single series on the meropodites, 2 or 3 series on the carpopodites and propodites.

Colours in spirit: yellowish or greenish brown, somewhat mottled on the carapace and somewhat banded on the legs; fingers black, the colouration not extending to the hand.

In the Indian Museum are 20 specimens, from the Andamans and Mergui.

This species is suspiciously like the *Pilodius pugil* of Dana.

94. *Chlorodopsis wood-masoni*, n. sp.

Carapace with a few rather long scattered hairs, legs with similar but more numerous hairs, not in any way concealing the sculpture, chelipeds almost free from hairs.

The carapace is thick, and has the regions and subregions well defined, in its anterior $\frac{3}{4}$, by broad smooth grooves, and coarsely and unevenly granular.

The front is cut into two sharply denticulate lobes, the outer angle of each of which is very distinctly isolated and spine-like. The orbital margin is denticulate and has the three fissures distinct.

The antero-lateral margin has four large procurved spines, some of which (almost constantly the second one) may have an accessory spinule near the tip. Three or four of the lobules just inside either antero-lateral margin bear each a somewhat similar spine.

The outer angle of the basal antennal joint is prolonged into the orbital hiatus.

The chelipeds are unequal, the larger one being not quite twice the length of the carapace. The arm has one or two spine-like teeth at the distal end of both the anterior and the posterior border; the wrist is studded with spine-like tubercles and has a pair of strongish spines at the inner angle; the hand has spine-like tubercles along the upper surface, and close-set pearly granules along the outer and lower surfaces; fingers with spine-like denticles at base only.

Meropodites of legs with the upper border spinulate; carpopodites

and propodites each with two or three rows of spinules and sharp granules.

Colours in spirit—yellowish or reddish brown; fingers black, the colouration stopping sharply at the base of the thumb.

Carapace 8 millim. long, 13 millim. broad.

In the Indian Museum are 19 specimens from the Andamans.

This species is very closely related to *C. melanodactylus*, A. M. Edw. (of which we have in the Museum specimens from Samoa) but differs in having (1) only a few scattered hairs on the carapace, (2) the front deeply bifid and elegantly denticulate, with the outer angle isolated and spine-like, (3) the sculpture of the carapace much sharper and bolder, (4) the pearly granules and spine-like tubercles of the chelipeds more numerous and close-set.

From *C. spinipes* it differs in having (1) the front sharply spinulate, (2) the first spine of the antero-lateral border almost as large and well spaced as the other three, the 2nd and 3rd spines moreover having almost always an accessory spinule near the tip, (3) the spines of the legs not so large and acicular and not so much concealed by hairs.

It may very possibly be the *Pilodius scabriculus* of Dana.

Sub-genus Cyclodius, Dana.

Cyclodius, Dana, Silliman's Amer. Journ. Sci. and Arts, (2) XII. 1851, p. 126; and U. S. Expl. Exp. Crust. pt. I. p. 222.

Cyclodius agrees in every particular with *Chlorodopsis*, excepting only that the carapace is longer and narrower, being, in fact, almost as much sub-circular as hexagonal.

In general form, as in the relations of the basal antennal joint, *Cyclodius* much resembles *Etisodes*, from which, however, the form and breadth of the front at once distinguishes *Cyclodius*.

95. *Chlorodopsis* (*Cyclodius*) *ornata*, Dana.

Cyclodius ornatus, Dana, Proc. Acad. Nat. Sci. Philad. VI. 1852, p. 80; and U. S. Expl. Exp. Crust. pt. I. p. 223, pl. xii. figs. 11*a–g*.

Carapace flattish, about $\frac{4}{5}$ as long as broad, almost as much sub-circular as hexagonal, its regions and subregions delimited by well cut grooves, the subregions being numerous and having a microscopically granular surface.

Front a little more than half the greatest breadth of the carapace, bilobed, the outer angle of each lobe well pronounced. Orbital margin with two grooves above and one at the outer angle.

Antero-lateral margin cut into four teeth (exclusive of the orbital angle) the last three of which are procurved and claw-like.

Basal antennal joint prolonged into the orbital hiatus—and filling it—on the same extensive scale as in *Chlorodopsis areolata*.

Chelipeds very little unequal, not much longer and stouter than the legs, about $1\frac{3}{4}$ times the length of the carapace: arm with several spinules along the posterior border and two large ones on the anterior border; wrist and hand with numerous sharp spine-like tubercles, which fall into longitudinal series on the outer surface of the hand; fingers with some coarse spinules at base, rather strongly arched, broadened and hollowed at tip.

Legs granular, somewhat furred, the upper border of the meropodites carpopodites and propodites spinate.

The grooving of the under surface of the carapace, found in all the species of *Chlorodius*, *Chlorodopsis*, &c., is particularly elegant.

In the Indian Museum is a male from the Andamans (and one from Mauritius).

Alliance III. *Cymoida.*

Cymo, De Haan.

Cymo, De Haan, Faun. Japon. Crust. p. 22.

Cymo, Dana, Amer. Journ. Sci. and Arts. (2) XII. 1851, p. 126; and U. S. Expl. Exp. Crust. pt. I. p. 224.

Carapace about as long as broad, subcircular, or less commonly elongate-pentagonal; not, or little, convex; depressed, with regions and subregions faintly or not at all shown.

Fronto-orbital border from about $\frac{3}{5}$ to $\frac{3}{4}$ the greatest breadth of the carapace in extent. Front from about $\frac{1}{2}$ to about $\frac{1}{3}$ this measure, horizontal, bilobed, with the outer angle of each lobe prominent and separated from the supra-orbital margin by a notch and groove. The grooves of the orbital margin are either indistinguishable or distinct. Eyes on short thick stalks.

The antennules fold obliquely. The basal joint of the antennæ has its outer angle produced into the orbital hiatus, and the flagellum, which is short, is situated between this process of the basal joint and the front.

The chelipeds are remarkably unequal in both sexes, the larger cheliped, in adults, being more than half again as long and more than twice as massive as the smaller: the fingers of the larger cheliped are short, thick, blunt-pointed (beak-like) and hollowed at tip; those of the smaller hand, though also hollowed-out, are long and slender.

The legs are invested and fringed with a thick shaggy fur that entirely conceals their sculpture: they are short and massive.

The abdomen of the male consists of five joints, the 3rd–5th somites being fused.

The species of this genus are at once recognized by the subcircular carapace, which even in the male leaves the first two and part of the third abdominal terga exposed in a dorsal view; and by the remarkable inequality and dissimilarity of the chelipeds.

Key to the species of Cymo.

I. Carapace subcircular, depressed, but not quite flat:—
  i. Wrists and hands studded with sharpish granules only: front bilobed, the edge of each lobe denticulate:—
    1. Fingers white..... *C. andreossyi.*
    2. Fingers black except at tip..... *C. melanodactylus*
  ii. Wrists and hands with large granular warts as well as granules:—
    1. Front bilobed, the edge of each lobe concave and the angles in the form of granular tubercles, so that the front appears four-lobed..... *C. quadrilobatus.*
    [2. Front not four-lobed..... *C. tuberculatus.*]

II. Carapace more elongate-pentagonal than subcircular, perfectly flat..... *C. deplanatus.*

96. *Cymo andreossyi*, (Audouin) De Haan.

Pilumnus? andreossyi, Audouin on Savigny's Descr. de l'Egypte, pl. v. fig. 5, p. 86.

Cymo andreossyi, De Haan, Faun. Japon. Crust. p. 22: Dana, U. S. Expl. Exp. Crust. pt. I. p. 225, pl. xiii. figs. 2 *a-b*: Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 34: Heller, SB. Ak. Wien, XLIII. 1861, p. 346, and Novara Crust. p. 20: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 252: Kossmann, Reise roth. Meer. Crust. p. 35: Miers, Phil. Trans. Vol. 168, 1879, p. 487, and Zool. H. M. S. Alert. pp. 517, 532: de Man, Archiv. fur Naturges. LIII. 1887, i. p. 291: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 363: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 443.

Carapace almost circular, its greatest length being inappreciably less than it greatest breadth, closely covered with a spongy fur on removal of which can be seen (1) faint depressions demarcating the gastric and cardiac regions and incompletely separating the gastric region into three sub-regions, others subdividing the branchio-hepatic regions into faintly convex areolæ, and (2) a few granules on the anterior part of the gastric region (in a transverse line) and on some of the lobules of the branchio-hepatic regions.

Front rather more than $\frac{1}{5}$ the greatest breadth of the carapace in extent, bilobed, separated from the dentiform supra-orbital angle by a

groove, its free edge irregularly denticulate. Orbital margin entire. Lateral borders of the carapace somewhat granular.

Chelipeds markedly unequal, covered with fur, but not so much as to entirely conceal their sculpture. The arm has both borders fringed with fur and the distal corner of the upper surface granular; the upper and outer surfaces of the wrist are studded with sharpish granules, as are the upper, outer and part of the inner surfaces of the hands and the basal half of the finger — those towards the upper part of the hand having a linear arrangement. The fingers of the larger cheliped are stout, truncated, blunt-pointed and strongly hollowed at tip; those of the smaller cheliped, though also hollowed, are thin, slender and pointed.

The legs are covered with a thick shaggy coat of fur, which is specially long and adherent along the borders. When this is removed the upper edge of the meropodites is finely granular, and the upper borders of the following joints are traversed by several rows of sharpish granules.

Colours in spirit, brownish yellow or fawn-colour, fingers white.

In the Indian Museum are 11 specimens, from Mekran coast, Ceylon, Andamans and Nicobars (besides 11 from other parts of the Indo-Pacific).

97. *Cymo melanodactylus*, De Haan.

Cymo melanodactylus, De Haan, Faun. Japon. Crust. p. 22: Dana, U. S. Expl. Exp. Crust. pt. I. p. 225, pl. xiii. fig. 1: Stimpson, Proc. Acad. Nat. Sci. Philad. 1858, p. 34: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 252: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 442.

Cymo andreossyi var. *melanodactylus*, Miers, Zool. H. M. S. Alert, p. 533 de Man, Journ. Linn. Soc. Zool. XXII. 1887-88, p. 35.

Differs from *C. andreossyi* in the following particulars:—

(1) the carapace is more lumpy; (2) the anterior half of the lateral borders shows more distinct indications of three lobules, some of which may even bear a spinelet; (3) the fingers are black, except at tip.

In the Indian Museum are 8 specimens, from the Andamans, Mergui and Ceylon, (besides 2 from other parts of the Indo-Pacific.)

98. *? Cymo deplanatus*, A. Milne Edwards.

? Cymo deplanatus, A. Milne Edwards, Journ. Mus. Godeffr. I. 1873, p. 257.

This species, if I am correct in my identification, differs from *Cymo andreossyi* only in the following particulars:—

The carapace is less subcircular and more elongate-pentagonal;

it is as flat as a coin and is either quite smooth or has only a transverse row of granules in the anterior part of the gastric region: the somewhat pentagonal outline is due to the antero-lateral borders being convergent from a distinct, though obtuse, angle of union with the postero-lateral.

99. *Cymo quadrilobatus*, Miers.

Cymo quadrilobatus Miers, Zool. H. M. S. Alert, p. 533.

General form as of *C. andreossyi*.

The carapace is covered with a fine close down which does not, however, in the least conceal its sculpture.

On either side of the carapace just behind the front are two granular transverse elevations (=Dana's areolæ 2 F and 1 M): the branchio-hepatic regions are distinctly areolated, the areolæ having the form of elevated clusters of pearly granules.

The front is really bilobed, but as each lobe has a deeply concave edge and both angles surmounted by a granular tubercle, it appears four-lobed.

The three grooves near the outer angle of the (beaded or crenulate and somewhat tumid) orbital margin are very distinct. The anterior half of the lateral margin of the carapace is divided into three granular lobes.

The chelipeds have the same general form and proportions as in *C. andreossyi*: they are more or less invested with a fine down, which does not conceal their sculpture: the upper surface of the arm is covered with pearly granules: the upper and outer surfaces of the wrist, and the upper, outer and much of the inner surfaces of the hands, are covered with pearly granules, many of which, on the wrist and in lines along the upper surface of the hand, unite to form large wart-like tubercles: the fingers of the larger cheliped are stout, truncated, blunt pointed and somewhat hollowed at tip; those of the smaller cheliped, though hollowed, are thin and pointed.

The legs are thickly covered with fur and long adherent silky hairs, beneath which the whole dorsal surface of the last four joints is granular.

Colours in spirit: light yellow, with either livid or rich chestnut brown mottled markings on the carapace: fingers of the larger hand whitish, usually with a black base, those of the smaller hand black with white tips; in both cases the distal half of the lower border of the hand is black.

Carapace of largest specimen in the Indian Museum collection 15·5 millim. long, 16 millim. broad.

In the Indian Museum are 5 specimens, from Palk Straits, 5–7 fms., and off Little Andaman 12 fms.

100. *Cymo tuberculatus*, Ortmann.

Cymo tuberculatus, Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 443.

This species, from the Maldive Islands, resembles *C. quadrilobatus* in the characteristic sculpture of the chelipeds, and may perhaps be identical with Miers' species.

It is not represented in the Indian Museum.

Section II. *Hyperomerista.*

The efferent branchial channels are defined by a ridge on either side of the palate, the ridges extending right up to the epistomial edge.

Sub-family IV. Menippinæ.

Carapace broad, transversely oval; front a fourth, or less than a fourth the greatest breadth of the carapace. The basal antennal joint does not nearly reach the front. The abdomen of the male has all 7 segments distinct and separate.

Alliance I. Menippioida. Carapace convex, its antero-lateral borders longer than the postero-lateral: ridges of the endostome faint.

Alliance II. Pseudozioida. Carapace flat, its antero-lateral borders shorter than the postero-lateral: ridges of the endostome strong and sharp.

Sub-family V. Oziinæ.

Carapace broad, transversely oval; front broad, about a third the greatest breadth of the carapace. The basal antennal joint is broadly in contact with the front. All 7 segments of male abdomen distinct and separate. The efferent branchial channels very distinct and circumscribed.

Alliance I. Ozioida. The orbital hiatus is open and is occupied by the antennary flagellum.

Alliance II. Ruppellioida. The orbit is a completely closed cavity.

Sub-family VI. Pilumninæ.

Carapace moderately broad; front about a third the greatest breadth of the carapace: the antero-lateral borders of the carapace

are not longer than, and are often shorter than, the postero-lateral. The basal antennal joint does not touch, or only just touches, the front.

Alliance I. Pilumnoida. Carapace commonly densely tomentose, its regions commonly well defined and areolated.

Alliance II. Heteropanopioida. Carapace smooth, its regions either not at all, or not very well defined.

Sub-family VII. Eriphiinæ.

Carapace sub-quadrilateral, the antero-lateral borders not forming an arch but meeting the postero-lateral borders at a very open and inconspicuous angle. Front very broad, half or more the greatest width of the carapace, and, with the orbits, occupying the whole anterior border of the carapace. Basal antennal joint not touching the front. Abdomen of the male either with all 7 segments distinct or with the 3rd, 4th and 5th fused.

Alliance I. Eriphioida. The gastric region, at least, is well defined: basal antennal joint short and thick: orbits deep: arms stout and short.

Alliance II. Trapezioida. Carapace perfectly smooth, without trace of regions: basal antennal joint slender: orbits shallow, affording little concealment to the eyes: arms long or very long, projecting in large part or entirely beyond the carapace, in repose.

Alliance III. Domecioida. No trace of regions; orbits shallow; arms short; legs, chelipeds, and frontal and antero-lateral borders of carapace strongly spinate. Merus of external maxillipeds more than twice as broad as long.

Alliance IV. Melioida. Carapace hexagonal, the regions either absent or fairly well defined; basal antennal joint slender; orbits shallow. The chelipeds are very much shorter and slenderer than the legs.

Subfamily IV. Menippinæ.

Alliance I. *Menippioida.*

Menippe. Myomenippe.

Menippe, De Haan.

Menippe, De Haan, Faun. Japon. Crust. p. 21.

Pseudocarcinus, Milne Edwards, Hist. Nat. Crust. I. 407.

Menippe, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, p. 280; and Exp. Sci. Mex. Crust. p. 262.

Carapace broad, transversely oval, moderately convex fore and aft,

very slightly so from side to side; the regions, except the gastric, little defined.

Antero-lateral borders long, strongly arched, cut into four teeth; postero-lateral borders slightly shorter than antero-lateral, convergent; posterior border short.

Front narrow, less than a fifth the greatest breadth of the carapace, rather prominent, almost horizontal, cut into two prominent lobes, the outer angle of each of which forms a distinct tooth.

Orbit with the three grooves near the outer angle well marked: inner orbital angles—both upper and lower—well pronounced. Eyes on short thick stalks.

The side edges of the front are not turned down and the short basal antennal joint does not nearly reach the front, so that the cavities of the orbits and antennules are not properly separated: the next antennal joint just reaches the front, and the long antennary flagellum stands in the orbital hiatus. The antennules fold nearly transversely.

The anterior edge of the merus of the external maxillipeds is oblique and a little sinuous but not excised.

The ridges of the endostome, defining the expiratory channels, are complete, but low and faint.

Chelipeds massive, a little unequal in both sexes; fingers stout, pointed, not hollowed.

Abdomen of male singularly broad, all seven segments distinct.

101. *Menippe rumphii*, Fabr., v. Martens.

Cancer rumphii, Fabr., Ent. Syst. Suppl. p. 336: Herbst, Krabben, III. i. 63, pl. xlix. fig. 2.

Menippe rumphii, v. Martens, Archiv. für Naturges. XXXVIII. 1872, p. 88: de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 36: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 363.

Pseudocarcinus bellangeri, Milne Edwards, Hist. Nat. Crust. I. 409, pl. xiv *bis*, fig. 15.

Menippe bellangeri, Heller, Novara Crust. p. 15: Muller, Verh. Ges. Basel, VIII. 1886, p. 474.

Gastric region distinct and fairly distinctly subdivided into three lobes; between it and the front are four pimple-like tubercles standing in a square. Two low indistinct somewhat granular elevations, nearly parallel with the curve of the antero-lateral border, traverse either branchial region; the first, which is the more distinct, can generally be traced across the gastric region also. The surface of the carapace is finely pitted antero-laterally, but elsewhere is smooth.

The front, which is not quite a fifth the greatest breadth of the carapace, consists of two prominent round-pointed lobes, outside of

each of which is a prominent rounded tooth separated from the supra orbital margin by a groove.

The antero-lateral border is fairly sharp and is divided into four broad lobes, of which the last two are distinctly, the first two indistinctly, acuminate.

Chelipeds massive, a little unequal, smooth with some fine and distant pitting: inner angle of wrist bluntly prominent; fingers stout, rather short.

Legs stout, smooth, except the upper border which is sometimes microscopically granular: upper border of carpopodites sparsely, both borders of propodites and dactyli more thickly, hairy.

Colours in spirit reddish or brownish yellow with sometimes a fine network of darker markings; fingers black.

In the Indian Museum are 100 specimens, from Penang, Tavoy, Mergui, Madras coast, Ceylon, Laccadives, Karáchi and Persian Gulf.

Subgenus Myomenippe, Hilgendorf.

Myomenippe, Hilgendrof, MB. Ak. Berl. 1878, p. 795.

Closely resembles *Menippe* in all respects, but differs (1) in the orbit being a completely closed cavity, owing to the contact of its upper and lower inner angles; hence the long antennary flagellum is quite excluded from the orbit, and (2) in the front being rather broader (nearly a fourth the greatest breadth of the carapace) and six-lobulate.

102. *Menippe* (*Myomenippe*) *granulosa*, A. M. Edw.

Menippe granulosa, A. Milne Edwards, Ann. Soc. Ent. Fr. (4) VII. 1867, p. 275.

Myomenippe duplicidens, Hilgendorf MB. Ak. Berl. 1878, p. 796, (*fide* de Man.)

Myomenippe granulosa, de Man, Journ. Linn. Soc. Zool., XXII. 1887-88, p. 40, pl. ii. fig. 1; and Zool. Jahrb., Syst., VIII. 1894-95, p. 525.

The gastric region is fairly well demarcated and subdivided into three areas, the two antero-lateral of which have the surface broken up into low granular convexities: the lateral regions of the carapace are also rugose, the wrinkles being granular and falling into two broken series almost parallel with the curve of the antero-lateral borders. Every margin of the carapace is granular, as is also—besides the rugosities already mentioned—but more finely, a good deal of the surface near the margins.

The antero-lateral border is thin and rather sharp and is cut into four teeth, the first three of which are broad and anteriorly acuminate, the last narrow and carinated.

The front, which is nearly a fourth the greatest breadth of the carapace, is prominent, is separated from the orbit by a deep notch, and is bilobed, each lobe being cut into three teeth. The inner lower angle of the orbit is of the same size and form and as prominent as the innermost (largest) lobule of the frontal lobes.

Chelipeds massive, a little unequal; upper and outer surfaces of wrist and upper (and sometimes in the case of the smaller cheliped the greater part of the outer) surface of hand granular; fingers stout and rather short: inner angle of wrist sharply prominent, somewhat upcurved, a finely beaded line passing from its summit, backwards, along the whole length of the wrist.

Legs stout, with a rough and furred or scurfy surface, the upper border of the last four joints and the lower border of the last two rather abundantly fringed with fine stiff hairs.

Colours in spirit light brown, or greenish brownish yellow; fingers black.

In the Indian Museum are 6 specimens, from Mergui, Arakan, Diamond I., Singapore.

Alliance II. *Pseudozioida.*

Pseudozius, Dana.

Pseudozius, Dana, Silliman's Journal (2) XII. 1851, p. 127; Proc. Ac. Nat. Sci. Philad. 1852, p. 81; and U. S. Expl. Exp. Crust. pt. I. p. 232.

Pseudozius, Miers, Challenger Brachyura, p. 141.

Carapace broad, transversely oval, little convex or quite flat, the regions not demarcated.

Antero-lateral border arched, shorter than postero-lateral border, obscurely divided into four very shallow lobes.

Front rather broad, much more than a fourth the greatest breadth of the carapace, separated from the orbit by a notch, excised in the middle line and having the outer angles pronounced,—and so, obscurely four-partite.

Orbital margin entire, the upper and lower inner angles almost in contact. The antennules fold nearly transversely.

Basal antennal joint very short, the next joint reaches the front; the flagellum, which is hardly as long as the major diameter of the orbit, lodged in a notch between the front and the orbital wall, but quite outside the latter.

The crests of the endostome, defining the expiratory channels, are strong, and the anterior border of the merus of the external maxillipeds is notched to assist in forming a permanent expiratory orifice.

Chelipeds massive, unequal in both sexes, the fingers pointed, not hollowed.

Abdomen of the male with all 7 segments distinct.

103. *Pseudozius caystrus* (Ad. and White) Miers.

Panopeus caystrus, Adams and White, Samarang Crust. p. 42, pl. ix. fig. 2.

Pseudozius planus, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 81; and U. S. Expl. Exp. Crust. pt. I. p. 233, pl. xiii, figs. 6*a–h*: Richters in Möbius, Meeresf. Maurit. p. 148.

Pseudozius caystrus, Miers, Challenger Brachyura, p. 142: Ortmann, Zool. Jahrb., Syst., VII, 1893-94, p. 434; and in Semon's Forschungsr. (Jena. Denk. VIII), Crust. p. 49: de Man, Zool. Jahrb., Syst., VIII, 1895, p. 525: Whitelegge, Mem. Austral. Mus. III, 1897, p. 136.

Carapace transversely oval, depressed, smooth, almost flat behind the deflexed finely granular fronto-orbital region: no distinct regional boundaries.

The antero-lateral border is fairly sharp and is obscurely divided into four shallow lobes, the first two of which are rounded and almost confluent.

Front between a third and a fourth the greatest breadth of the carapace, bluntly four-partite.

Orbits with the margins entire, eyes small.

The buccal cavern is distinctly narrower anteriorly than posteriorly.

Chelipeds unequal, very massive, quite smooth to the naked eye; two strongish tubercles at the inner angle of the wrist; fingers arched, pointed, in the adult male they meet only at tip.

Legs smooth, dactyli furred, a few fine scattered silky bristles on the propodite.

Colours in spirit brownish yellow, fingers darker.

In the Indian Museum are 63 specimens, mostly from the Andamans, but also from the Mekrán (Baluchistán) coast, the Laccadives, and Bombay or Aden. (Also 2 from Samoa and 1 from Bantam).

Subfamily V. Oziinæ.

Alliance I. *Ozioida.*

Ozius. Epixanthus.

Ozius, Edw.

Ozius, Milne Edwards, Hist. Nat. Crust. I. 404.

Ozius, Dana, Silliman's Journ. (2) XII. 1851, p. 127; and U. S. Expl. Exp. Crust. pt. I. p. 229.

Ozius, A. Milne Edwards, Ann. Sci. Nat. Zool. (4) XX. 1863, p. 289; and Nouv. Archiv. du Mus. IX. 1873, p. 237; and Miss. Sci. Mex., Crust. p. 276.

Carapace broad, transversely oblate-oval, moderately convex fore and aft, slightly convex or nearly flat from side to side; the regions, except the gastric, little defined; the surface smooth, or granular, often rugose anteriorly.

Antero-lateral borders of good length, strongly arched, usually broadly crenate or lobulate: postero-lateral borders convergent, usually about as long as the antero-lateral.

Front rather broad (considerably more than a fourth the greatest breadth of the carapace) obliquely deflexed, cut into four lobules or teeth of about equal size, separated from the orbit by a notch.

Orbits deep, rather small, the grooves near the outer angle inconspicuous: eyes on short thick stalks. The antennules fold nearly transversely.

Basal antennal joint prolonged between the side of the front and the orbital plate; the flagellum, which is very small (about half the major diameter of the orbit in length), stands in the orbital hiatus.

The ridges of the endostome, defining the expiratory channels, are very strong, and the opposed margin of the merus of the external maxillipeds is notched, usually very deeply, so that a permanent expiratory orifice results.

Chelipeds massive, unequal in both sexes; the fingers of good length, pointed not hollowed. In the Indian species there is a very large tooth at the base of the dactylus of the larger hand.

The abdomen of the male consists of 7 segments.

Key to the Indian species of Osius.

I. Carapace more than ¾ as long as broad, scabrous, more or less studded—like the wrists and hands—with salient pearly tubercles ..... *O. tuberculosus.*

II. Carapace ¾ as long as broad, smooth to feel, no tubercles; surface of wrists and hands—all or part—reticulate rugulose ..... *O. rugulosus.*

104. *Ozius rugulosus*, Stimpson.

Ozius rugulosus, Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 34: Heller, Novara Crust. p. 22, pl. iii. fig. 1: A. Milne Edwards, Nouv. Archiv. du Mus. IV. 1868, p. 71, and IX. 1873, p. 240, pl. xi. fig. 3: Miers, P. Z. S. 1877, p. 135: Haswell, Cat. Austral. Crust. p. 63: Cano, Boll. Soc. Nat. Napol. III. 1889, p. 204: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 477, and in Semon's Forschungsr. (Jena. Denk. VIII.) Crust. p. 53.

Carapace two-thirds as long as broad, its surface everywhere finely pitted but not rough, a good deal rugulose and finely eroded just inside the antero-lateral borders: gastric region fairly well defined and in-

completely subdivided into three areolæ: branchial regions traversed by two ridges, which run respectively from the 3rd and 4th lobes of the antero-lateral borders, obliquely upwards and inwards to the gastric region.

Front cut into 4 equidistant teeth. Antero-lateral border rather faintly divided into 5 lobes, of which the first two are broad and rounded and the last three are bluntly acuminate. Orbital margin slightly tumid, well marked off from carapace; faint traces of two grooves near the outer angle; the inner angle of the lower margin a little prominent.

The upper and outer surfaces of both wrists and of the smaller hand, and the upper surface of the larger hand are reticulate-rugulose.

Legs stout, the last three joints and part of the under surface of the meropodites of all are tomentose.

Efferent branchial foramen large, sub-quadrangular.

Colours in spirit, dark violet brown or dark bluish brown, fingers black.

In the Indian Museum are 5 specimens, from the Andamans and Arakan.

105. *Ozius tuberculosus*, Edw.

Ozius tuberculosus, Milne Edwards, Hist. Nat. Crust. I. 405: Heller, Novara Crust. p. 23: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 238, pl. xi. fig. 2: Muller, Verh. Ges. Basel VIII. 1886, p. 474: de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 45: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 364.

Carapace more than two-thirds as long as broad, studded (except sometimes in the central and posterior parts) with small sharp pearly tubercles; gastric region well defined and imperfectly divided into elongate areolæ; branchial regions crossed transversely by two crescentic furrows, which have a common starting-point at the fourth tooth of the antero-lateral margin; post-orbital furrow well defined.

Front sunk below the level of the orbits, cut into four equidistant scabrous teeth. Antero-lateral border granular, cut into five teeth (exclusive of the orbital angle), of which the last is tuberculiform and the first four are broad and anteriorly-acuminate.

The lower edge of the orbit is separated from the tumid arch of the upper edge by a small gap, and is deeply concave between the dentiform external and internal angles.

Basal antennal joint massive, sinuous, granular. Efferent branchial foramen large, subcircular.

Chelipeds and legs with rough harsh surfaces: the upper and outer surfaces of the wrists and hands are for the most part studded with

sharp pearly tubercles like those on the carapace: the inner angle of the wrist is somewhat produced and forms a double-crowned tubercle.

The whole animal has a harsh feel, due partly to the roughness of the surface and partly to the presence of very short, stubbly, scattered bristles.

Colours in spirit, light red or madder, fingers darker, dactyli of legs blackish.

In the Indian Museum are two specimens, from Mergui and the Nicobars.

Epixanthus, Heller.

Epixanthus, Heller, SB. Ak. Wien, XLIII. 1861, i. p. 323.

Epixanthus, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, p. 290; and Nouv. Archiv. du Mus. IX. 1873, p. 240.

Epixanthus, de Man, Journ. Linn. Soc. Zool. XXII. 1887-88, p. 45.

Carapace very broad, transversely oval, either moderately convex or almost flat, the regions very obscurely marked.

Antero-lateral borders long, strongly arched, with a thin sharp edge, usually regularly fissured or dentate: postero-lateral borders strongly convergent.

Front broad (from one-fourth to nearly one-third the greatest breadth of the carapace), slightly deflexed, separated from the supra-orbital margin by a notch, cut into four teeth or lobes. Either a suture or a gap beneath outer angle of orbit.

Antennules folding transversely, inter-antennulary septum broad. Basal antennal joint very broad and short, largely in contact with the front; flagellum very short (less than half the major diameter of the orbit), lodged in the orbital hiatus.

The ridges of the endostome, defining the expiratory canal, are very strong, but the anterior border of the merus of the external maxillipeds is either not at all or only very slightly notched.

Chelipeds massive, unequal in both sexes; fingers long, pointed, those of the smaller hand being remarkably long and slender.

Abdomen of the male with all 7 segments distinct.

Key to the Indian species of Epixanthus.

I. Carapace nearly flat, nearly smooth; antero-lateral border divided by very short narrow fissures into four broad shallow lobes ..... *E. frontalis.*

II. Carapace convex, scabrous; antero-lateral border deeply cut into five sharp thin teeth ..... *E. dentatus.*

106. *Epixanthus frontalis*, (Edw.) Heller.

Ozius frontalis, Milne Edwards, Hist. Nat. Crust. I, 406: Krauss, Sudafr. Crust. p. 31: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 34: Hilgendorf, in v. d. Decken's Reisen Ost-Afr. III, i. p. 75.

Epixanthus frontalis, Heller, Novara Crust. p. 20: A. Milne Edwards, Nouv. Archiv. du Mus. IX, 1873, p. 241: Kossmann, Reise roth. Meer., Crust. p. 36: Richters, in Möbius, Meeresf. Maurit. p. 148, pl. xvi. fig. 16: Lenz and Richters, Abh. senck. Ges. XII, 1881, p. 421: Miers, Zool. H. M. S. Alert, pp. 517, 534: F. Muller, Verh. Ges. Basel, VIII, 1886, p. 474: de Man, Journ. Linn. Soc. Zool., XXII, 1887-88, p. 46; and Archiv. fur Naturges. LIII, 1887, i. p. 292; and Zool. Jahrb., Syst. 1894-95, p. 525; Cano, Boll. Soc. Nat. Napol. III, 1889, p. 205: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 364: Ortmann, Zool. Jahrb., Syst., VII, 1893-94, p. 477.

Epixanthus kotschii, Heller, SB. Ak. Berl. XLIII, 1861, i. p. 325, pl. i. fig. 14 (*fide* Heller).

Carapace transversely oval, depressed, almost flat, its length a little over $\frac{5}{6}$ its breadth, granular and finely and faintly rugulose just inside the frontal and antero-lateral borders, smooth elsewhere. The gastric region and its three subregions are faintly indicated, and a low fine sinuous ridge completely traverses each branchial region from the last tooth of the antero-lateral border.

The front, which is a good deal less than a third the greatest breadth of the carapace, and has a double edge, is cut into four low teeth. Below the outer angle of the orbit there is a suture, not a gap.

Antero-lateral border thin and sharp, divided by short, narrow notches into four very broad shallow lobes, of which only the last two are at all acuminate.

Chelipeds massive, remarkably unequal—in the adult male especially. They are practically smooth. The fingers of the larger hand of the adult male are strongly arched and meet only at tip.

Legs almost smooth; the borders of the dactylus and of the distal half of the propodite, in all, are covered with a short stubbly fur.

Colours in spirit, dirty yellowish or greenish brown, fingers blackish.

In the Indian Museum are 60 specimens, from the Andamans, Mergui, Akyab, Orissa coast, Ceylon, Makran coast (besides 22 specimens from localities outside India).

107. *Epixanthus dentatus*, (White).

Panopeus dentatus, White, P. Z. S. 1847, p. 226; Ann. Mag. Nat. Hist. (2) II. 1848, p. 286; Adams and White 'Samarang' Crust. p. 41, pl. xi. fig. 1.

Heteropanope dentatus, Stimpson, Proc. Ac. Nat. Sci. Phila. 1858, p. 35: A. Milne Edwards, Nouv. Archiv. du Mus. IV. 1868, p. 71.

Epixanthus dentatus, Miers, Ann. Mag. Nat. Hist. (5) V. 1880, p. 233: de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 46: Henderson, Trans. Linn. Soc., Zool.,

(2) V. 1893, p. 364: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 478; and in Semon's Forschungsr. (Jena. Denk. VIII.) Crust. p. 53.

Epixanthus dilatatus, de Man, Notes Leyden Mus. I. 1879, p. 58 (*fide* de Man).

Panopæus acutidens, Haswell, P. L. S., N. S. W., VI. 1881-82, p. 542; and Cat. Austral. Crust. p. 51, pl. i. fig. 2.

Carapace transversely oval, convex fore and aft, slightly so from side to side; its length about $\frac{7}{8}$ its breadth; its surface granular and somewhat tuberculous anteriorly, the tubercles being almost squamiform and fringed with short stubbly hair. The gastric region and its three subregions are very faintly indicated: the branchial regions are traversed by a low, sinuous, finely granular ridge.

The front, which is somewhat less than a third the greatest breadth of the carapace, has a rather indistinctly double edge and is cut into four lobes. There is a distinct gap in the orbital margin just below the outer orbital angle.

The antero-lateral border is deeply cut into five very thin sharp-edged teeth.

The exposed surfaces of the arms wrists and hands are finely reticulate-rugulose (most strongly marked on the hands) the reticulating wrinkles being covered with a very short stubbly or scurfy tomentum. Similar reticulating lines and patches of the same stubbly or scurfy growth also closely cover the surfaces of the leg joints.

Colours in spirit, dull earthly brown or yellowish, the carapace and chelipeds commonly mottled or marbled.

In the Indian Museum are 5 specimens, from Mergui and the Andamans (besides 2 from the South Sea Is.).

Alliance II. *Ruppellioida.*

Euruppellia. Baptozius.

Subgenus EURUPPELLIA.

Ruppellia, Milne Edwards, Hist. Nat. Crust. I. 420 (part).

Ruppellia, Dana, Silliman's Journal (2) XII. 1851, p. 128, and U. S. Expl. Exp. Crust. pt. I. p. 245.

Ruppellia, A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, p. 291.

Euruppellia, Miers, Zool., H. M. S. Alert, p. 534.

Differs from *Ozius* only in the form of the orbits. The upper and lower inner angles of the orbit are in contact, so as to close the orbit and to completely exclude the antennary flagellum.

I do not think this character is of generic importance, and I agree with Kossmann that the type of this genus should be included with *Ozius*.

There is however one species, *Ruppellia vinosa*, Edw., that is entirely different from any of the species (with, perhaps, the exception of *Ruppellia lata*, A. M. E.) with which it has hitherto been supposed to be congeneric.

This species I have separated as the type of a new genus *Baptozius*.

If, however, the other species of H. Milne Edwards' genus *Ruppellia* are referred to *Ozius*, then the name *Euruppellia* must be retained, in a different sense, for *Ruppellia vinosa* Edw., and the name *Baptozius* must lapse.

108. *Ozius* (*Euruppellia*) *tenax*, Ruppell.

Cancer tenax, Rüppell, 24 Krabben roth. Meer., p. 11, pl. iii. fig. 1, pl. vi. fig. 5.
Endora tenax, De Haan, Faun. Japon. Crust., p. 22.
Ruppellia tenax, Milne Edwards, Hist. Nat. Crust. I. 421: Kossmann, Reise roth. Meer., Crust., p. 40.

Carapace transversely oblate-oval, two-thirds as long as broad, rugulose and granular antero-laterally, smooth to the naked eye elsewhere. Gastric region well demarcated in its anterior two-thirds, and broken up into five incompletely separated but rather convex lobules: branchio-hepatic regions divided into two transverse somewhat convex areas, independent of the rugosities inside the antero-lateral margin.

Front sunk below the level of the orbits, cut into four equidistant rounded granular teeth. Supra-orbital margin tumid, well delimited from carapace, with two distinct grooves near the outer angle. Infra-orbital margin separated from the supra-orbital by a notch, deeply concave between the prominent dentiform internal and external angles.

Antero-lateral border granular, cut into five teeth, the first four of which are broad and anteriorly-acuminate, the fifth tuberculiform.

Chelipeds markedly unequal; upper and outer surfaces of wrist very finely granular, upper and more or less of outer surface of hand granular and studded with larger pustulous granules: inner angle of wrist bluntly bicuspid: fingers pointed, those of smaller hand long and rather slender, as in typical *Ozius*; those of larger hand stout, the movable finger with a huge tooth at base, as in Indian species of *Ozius*.

Legs stout, finely granular under a lens, but smooth to naked eye; the dactyli covered with velvet up to the claw.

Colours in spirit reddish yellow, the reddish tinge darkest on carapace.

In the Indian Museum is a fine specimen from the Mekrán (Baluchistán) coast.

109. *Ozius* (*Euruppellia*) *annulipes*, Edw.

Ruppellia annulipes, Milne Edwards, Hist. Nat. Crust. I. 422: Dana, U. S. Expl. Exp. Crust. pt. I. p. 246, pl. xiv. figs. 4*a*–*c*: Stimpson, Proc. Acad. Nat. Sci. Phila. 1858, p. 37: A. Milne Edwards, Nouv. Archiv. du Mus. IV. 1868, p. 71: Haswell, Cat. Austral. Crust. p. 73: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 479: Whitelegge, Mem. Austral. Mus. III. 1897, p. 137.

Euruppellia annulipes, Miers, Zool. H. M. S. Alert, pp. 517, 523: de Man, Archiv. fur Naturges. LIII. 1887, i. p. 293, pl. xi. fig. 4 (hand only).

Closely resembles *Ozius* (*Euruppellia*) *tenax*, but differs as follows:—(1) the front is cut into four broader, shallower and much less prominent teeth: (2) the five teeth of the antero-lateral border are much sharper, and the margin of the first three is sharp and crest-like: (3) the supra-orbital margin is, practically, entire, the grooves near the outer angle being hardly visible even with a lens: (4) the infra-orbital margin is separated from the supra-orbital only by a shallow groove, is not concave, and has its outer angle hardly prominent.

In the Indian Museum is a specimen from Muscat (besides one from Samoa).

Baptozius, n. gen.

Ruppellia (part) Milne Edwards, Hist. Nat. Crust. I. 420.

Type Ruppellia vinosa, Edw. (*Op. cit.* I. 422).

Carapace broad, transversely oval, moderately convex fore and aft, slightly so from side to side, with no indication of regions.

Front very broad, about two-fifths the greatest breadth of the carapace, obliquely deflexed, with a thin almost straight edge.

Antero-lateral border short, not two-thirds the length of the postero-lateral, thin, cut into four sharp-edged teeth.

Orbits large, with a sharp, prominent, entire edge: the upper and lower inner angles are in contact, so as to completely exclude the antennary flagellum.

Antennules folding nearly transversely, the inter-antennulary septum very broad.

Basal antennal joint massive; the flagellum of good length (about three-quarters the major diameter of the large orbit), lodged beneath the front and quite outside the orbital wall.

The crests of the endostome that define the expiratory canals are very strong, and a permanent orifice is formed not, as in *Ozius*, by a notch in the anterior border of the merus of the external maxillipeds—for the anterior border of the merus of the external maxillipeds is

entire—but by a deep emargination of the prolonged foliaceous opercular process of the first maxillipeds.

Chelipeds fairly massive, unequal in both sexes; fingers of good length, pointed.

Abdomen of male with all seven segments distinct.

110. *Baptozius vinosus*, (Edw.)

Ruppellia vinosa, Milne Edwards, Hist, Nat. Crust. I. 422.

Euruppellia vinosa, de Man, in Weber's Zool. Ergebn. Niederl. Ost-Ind. II. 1892, p. 278, pl. i. fig. 1.

Carapace broad, transversely oval, with a shiny frosted surface due to extremely close fine granulation, the granules becoming vesiculous and plainly visible to the naked eye near the frontal, orbital, and lateral borders.

The orbits are marked off by a fine groove, a short shallow ⅄-shaped groove bisects the front and ends on the anterior part of the gastric region, and a fine sinuous crease passes from the interval between the third and fourth tooth of the antero-lateral margin inwards towards the gastric region; otherwise the surface of the carapace is unbroken.

Front nearly two-fifths the greatest breadth of the carapace, almost straight, with a fine double edge, the upper rim of which runs on to the orbit while the lower turns obliquely downwards to rest on the basal antennal joint,—both rims finely beaded.

The antero-lateral borders are cut into four thin sharp-edged teeth, the first three of which are somewhat angular, while the last is elegantly procurved: the edges of all are finely beaded.

The orbits are large and almost subtubular: the finely-beaded edge is entire, and the inner angle of the lower border is bluntly prominent: quite inside the orbit, where the cornea comes into contact, is an elegant fringe of eye-lashes.

The upper and outer surfaces of the wrists and hands are finely frosted: the inner angle of the wrist has the form of a sharp spine.

The last three joints of the legs are more or less covered with a harsh tomentum, thickest along the upper surface.

Colours in spirit: carapace dark purple above, dark greenish below, legs greenish, chelipeds greenish daubed with red and purple, fingers red. In very old spirit specimens the carapace and chelipeds are of a rosy madder.

In the Indian Museum are 4 specimens from the Andamans and one from an unrecorded (Indian) locality.

Sub-family VI. Pilumninæ.

Alliance I. *Pilumnoida.*

Pilumnus. Actumnus.

Pilumnus, Leach.

Pilumnus, Leach, Trans. Linn. Soc. XI. 1815, p. 321; and Malac. Podophth. Brit.: Latreille, Encycl. Meth. X. p. 124: Desmarest, Consid. Gen. Crust. p. 111: De Haan, Faun. Japon. Crust. p. 19: Milne Edwards, Hist. Nat. Crust. I. 415: Dana, Silliman's Amer. Journ. Sci. and Arts, (2) XII. 1851, p. 127, and U. S. Expl. Exp. Crust. p. 229: Milne Edwards, Ann. Sci. Nat. Zool. (4) XX. 1863, p. 285: Kossmann, Reise roth. Meer. p. 37: Milne Edwards, Miss. Sci. Mex. Crust. p. 280: Miers, Challenger Brachyura, p. 145.

In the numerous species of this genus the carapace and legs are generally thickly covered with hair.

Carapace transversely oval or subquadrilateral, declivous anteriorly, flat posteriorly, not greatly broader than long; the regions, as a rule, but moderately plainly demarcated and areolated.

Antero-lateral borders not longer, but commonly shorter, than the postero-lateral, and cut into teeth which, very commonly, are spiniform.

The front is usually about a third the greatest breadth of the carapace, but is sometimes broader: it is cut into two lobes, the outer angle of each of which commonly forms an independent dentiform or spiniform lobule separated from the supra-orbital angle by a groove or notch.

The orbits generally have a gap or fissure just below the outer angle, and one or two gaps or notches in the upper border: the inner lower orbital angle is commonly sharp and prominent. The eyestalks are moderately long and slender.

The antennules fold transversely. The basal antennal joint is short, either not quite touching the front, or just touching it by its inner angle; the flagellum, which is planted in the orbital hiatus, is long, usually very much more than the major diameter of the orbit.

The ridges of the endostome, defining the expiratory channels, are usually plain but not very high: the anterior border of the merus of the external maxillipeds is almost transverse and is not notched.

The chelipeds are stout, the fingers coarse, short and pointed. Legs usually stout and of moderate length.

The abdomen of the male consists of seven separate segments.

Key to the Indian species of Pilumnus.

1. Abnormal species:—
   Carapace and chelipeds quite smooth and devoid of hair ..... *P. lævis.*
   Carapace covered with symmetrically disposed, raised, curved or sinuated ridges ..... *P. labyrinthicus.*

2. Normal species in which the carapace (like the legs and the greater part of the chelipeds) is covered with a more or less thick coat of hair, and is without raised ridges :—
   1. Front about a third the greatest breadth of the carapace :—
      i. Carapace declivous anteriorly, flat posteriorly ; the outer orbital angle is not a spine, though it may be sharp :—
         1. Upper margin of orbit with two, very distinct, triangular gaps or notches :—
            a. A subhepatic spine just below outer orbital angle ..... *P. vespertilio.*
            b. No subhepatic spine :—
               α. Free edge of front, and upper margin of orbit, finely denticulate : front very prominent ..... *P. longicornis.*
               γ. Free edge of front, and upper orbital margin, smooth or nearly so : front not prominent ..... *P. andersoni.*
         2. Upper margin of orbit with one or both of the two notches indistinct or absent :—
            a. Regions and areolæ of carapace convex, uniformly granular, and separated by smooth, deepish, clean-cut grooves ..... *P. cærulescens.*
            b. Regions etc. of carapace faintly demarcated and not uniformly granular :—
               α. Notches in the denticulated upper orbital margin faint but distinguishable ..... *P. sluiteri.*
               γ. Only one notch in the smooth upper orbital margin, and that faint : legs long and slender ..... *P. cursor.*
      ii. Carapace uniformly convex, or globose ; the outer orbital angle is a spine like those of the antero-lateral border :—
         1. Regions of carapace fairly distinct : whole outer surface of larger hand covered with sharp prominent spine-like tubercles ..... *P. dorsipes.*
         2. Regions of carapace faint ; lower part of outer surface of hand smooth ..... *P. hirsutus.*
   II. Front nearer half than a third the greatest breadth of the carapace, nearly straight, finely denticulated, emarginate in the middle line ..... *P. dehaanii.*

111. *Pilumnus vespertilio*, Fabr.

Cancer vespertilio, Fabricius, Ent. Syst. II. 463, and Suppl. p. 338.

Pilumnus vespertilio, Desmarest, Consid. Gen. Crust. p. 112: Latreille, Encyc. Meth. X. p. 125: Milne Edwards, Hist. Nat. Crust. I. 418, and in Cuvier's Règne An., Crust. pl. xiv. fig. 3: Dana, U. S. Expl. Exp. Crust. pt. I. p. 236: Heller, SB. Ak. Wien, XLIII. 1861, p. 343: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 242: Miers, Crust. New Zealand, p. 19; and Ann. Mag. Nat. Hist. (5) V. 1880, p. 234; and Zool. H. M. S. Alert, pp. 183, 219: Tozzetti, Magenta Crust. p. 55, pl. iv. figs. 25, 27, 32: Hilgendorf, MB. Ak. Berl. 1878, p. 793: E. Nauck, Zeits. Wiss. Zool. XXXIV. 1880, p. 53 (*gastric teeth*): Richters in Möbius Meeresf. Maurit. p. 148: Haswell, Cat. Austral. Crust. p. 65: Filhol, Crust. New Zealand, p. 374, pl. xlv. fig. 5: de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 58; and Archiv. für Nat. LIII. 1887, i. p. 295; and in Weber's Zool. Ergebn. Niederl. Ost-Ind. II. 1892, p. 283; and Zool. Jahrb., Syst., VIII. 1894-95, p. 537: Cano, Boll. Soc. Nat. Napol. II. 1889, p. 206: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1886-90, p. 110: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 365: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, pp. 436, 438, and in Semon's Forschungsr. (Jena. Denk. VIII) Crust. p. 49: Zehntner, Rev. Suisse Zool. II. 1894. p. 154.

Pilumnus ursulus, Adams and White, Samarang Crust. p. 45, pl. ix. fig. 6: Hess, Archiv. für Nat. XXXI. 1865, i. pp. 137, 171, pl. vi. fig. 2; Kossmann, Reise roth. Meer., Crust. p. 39: F. Muller, Verh. Ges. Basel, VIII. 1886, p. 475.

Carapace, legs and chelipeds (with the exception of the fingers and the lower corner and lower border of the hand, which are bare) entirely concealed by a thick, dark, shaggy coat of coarse, tufted and somewhat matted hair. The hairs are of two kinds, longer and shorter, the longer being most numerous on the legs and on the borders of the carapace. The following description (and the descriptions of all the species mentioned in this paper) applies to the denuded animal.

Carapace transversely oval, nearly $\frac{3}{4}$ as long as broad, flat posteriorly, a good deal deflexed anteriorly, the regions fairly distinctly delimited and areolated, the surface studded with small well-separated clusters of granules, from which the hairs spring.

Front obliquely deflexed, about a third the greatest breadth of the carapace, cut into two lobes, each of which consists of a large prominent convex inner division and a small receding semi-independent, but not dentiform, outer angle, lying nearly in front of the inner upper angle of the orbit.

The orbital margins, like the edge of the front, are smooth or obscurely crenulate; in the upper margin are two broad triangular gaps: the outer angle of the orbit is sharp but not spiniform, and immediately below it is a fissure or gap in the infra-orbital margin.

The antero-lateral border is a little shorter than the postero-lateral, and is cut into three spiniform teeth, besides which there is a subhepatic denticle behind and below the outer orbital angle.

The chelipeds are unequal: the inner angle of the wrist may be sharp, but is never spiniform: the upper and outer surfaces of the wrists, of the smaller hand, and of all but the lower border and lower outer corner of the larger hand (which is quite bare and usually quite smooth) are covered with clusters of granules, some of which, on the smaller hand—and sometimes also on the larger hand—are arranged in longitudinal series.

The carpopodites and propodites of all the legs, and the meropodites also of the last pair, have the anterior and dorsal aspects granular. The longest legs are not much more than half again as long as the carapace.

In the Indian Museum are 64 specimens, chiefly from the Andamans, but also from Mergui and Palk Straits; (besides 10 specimens from other parts of the Indo-Pacific).

Pilumnus vespertilio, var.

Differs from the above only in having (1) the fur stiff, fine, bristly, and golden-yellow in colour, and (2) the whole of the outer surface—but not the lower border—of the larger hand granular.

In the Indian Museum are 9 specimens from Karáchi and 1 from Tavoy.

112. *Pilumnus longicornis*, Hilgendorf.

Pilumnus longicornis, Hilgendorf, MB. Ak. Berl., 1878, p. 794, pl. i. figs. 8, 9.

Carapace covered with a fine and very short fur, amid which—especially anteriorly—are numerous long silky bristles. Legs and chelipeds—except the larger hand, the greater part of which is quite bare—covered with similar fur and fringed with similar bristles.

Carapace somewhat quadrilateral or hexagonal, about $\frac{7}{9}$ as long as broad, anteriorly deflexed, posteriorly flat; the regions fairly distinctly defined and areolated, the surface granular near the frontal and antero-lateral margins, elsewhere smooth to the naked eye.

Front obliquely deflexed, about a third the greatest breadth of the carapace, deeply cut into two lobes, each of which consists of a prominent angularly-convex inner portion and an independent spiniform outer angle; the free edge finely and evenly denticulate.

Two triangular gaps in the finely denticulated upper orbital margin and a fissure in the denticulated lower margin, just below the outer angle, which is not dentiform or very conspicuous.

Antero-lateral margin a good deal shorter than the postero-lateral, cut into three longish procurved spiniform teeth the bases of which are granular. No denticle—at most only a slightly-enlarged granule—below the outer angle of the orbit.

Antennary flagellum considerably more than half the greatest length of the carapace, fringed with some long silky hairs.

Chelipeds very unequal; anterior border of ischium and arm spinulate or spinate, both the other borders of the arm spinulate or granular; upper and outer surfaces of wrist sharply granular, the inner angle of the wrist prolonged into a stout spine; the whole upper outer and lower surfaces of the smaller hand sharply granular, with several rows of enlarged spiniform granules, fingers of smaller hand fluted; the larger hand and fingers are smooth, except for a granular patch quite at the near end of the outer surface and extending a variable distance along the upper border of the hand, and for a small patch of granules at the base of the dactylus.

The upper border of the meropodites of the legs is usually sharply spinate.

Colours in spirit yellow, fingers dark brown.

In the Indian Museum are 21 specimens, from Mekrán, Karáchi, Bombay, Nicobars, and Malacca Strait.

113. *Pilumnus andersoni*, de Man.

Pilumnus andersoni, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 59, pl. iii. figs. 5, 6, and Zool. Jahrb. Syst., VIII. 1895, p. 552.

Closely resembles *P. longicornis* from which it differs in the following particulars:—

(1) the carapace appears broader owing to the front being less prominent:

(2) the free edge of the front and the upper margin of the orbit are nearly or quite smooth; the lobes of the front are much less prominent, the notch between them is not so wide and deep, and the outer angles are dentiform, not spiniform:

(3) the outer angle of the orbit is sharper:

(4) the granular patch at the base and along the upper border of larger hand is larger.

In the Indian Museum are 5 specimens, from Mergui, Ceylon, Karáchi (and 5 from Gaspar Strait).

114. *Pilumnus sluiteri*, de Man.

Pilumnus sluiteri, de Man, in Weber's Zool. Ergebn. Niederl. Ost-Ind. II. 1892, p. 283, pl. i. fig. 2: Ortmann, Zool. Jahrb., Syst., VII. 1893-94; pp. 436, 438.

Pilumnus forskalii, de Man (*nec* Edw.), Archiv. für Naturges. LIII. 1887. i. p. 295, pl. xii. fig. 1.

Carapace, legs and chelipeds (except the fingers) covered with a

harsh coat of short bristles with longer bristles interspersed, the latter being most numerous on the legs.

Carapace about $\frac{5}{6}$ as long as broad, deflexed anteriorly, nearly flat in the posterior two-thirds, the regions fairly distinctly delimited, the surface rather profusely studded with little pits, from which the tufts of bristles arise; some granules near the antero-lateral borders and on the front part of the gastric region.

Front cut into two lobes, each of which is again subdivided by a deep triangular gap into a large square-cut internal lobe and an acute triangular external lobule.

Orbital margin granular: there are two gaps in the upper margin, but the inner one is narrow and indistinct; there is also a small gap just below the outer angle of the orbit, which is not very prominent.

Antero-lateral margin not much shorter than the postero-lateral, cut into three somewhat granular spiniform teeth. No tooth below the outer angle of the orbit.

Antennary flagellum not quite a third the length of the carapace, not fringed with hairs, though there may be one or two at its base.

Chelipeds very unequal: upper and outer surfaces of both wrists and hands and bases of dactyli covered with granules or small pearly tubercles, which are larger and more numerous and more prominent on the hands than on the wrists; sometimes a small patch of granules on inner surface of hands: inner angle of wrists strongly pronounced and dentiform.

Legs stout, the longest pair are about two-thirds again as long as the carapace.

Colours in spirit: carapace yellow copiously overspread with brick-red, chelipeds and legs yellow blotched and sometimes banded with terra-cotta-red.

In the Indian Museum are 7 fine specimens from the Andamans (besides one from Samoa).

115. *? Pilumnus cursor*, A. Milne Edwards.

? Pilumnus cursor, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 244, pl. ix. fig. 4: Haswell, Cat. Austral. Crust. p. 67: Miers, Zool. H. M. S. Alert, pp. 183, 223: de Man, Archiv. für Naturges. LIII. 1887, i. p. 299.

Carapace etc. covered with a short fur with long hairs interspersed, the latter most numerous on the legs.

Carapace subquadrilateral, flat in the posterior half or more, declivous anteriorly, the regions faintly marked, finely and sparsely granular.

Front nearly two-fifths the greatest breadth of the carapace, not

very prominent, divided into two lobes, each of which consists of a convex inner part and an independent though not very prominent external angle.

The upper orbital margin is little prominent and has only one notch and that indistinct: outer orbital angle not prominent.

Antero-lateral border very much shorter than the postero-lateral, cut into three sharp teeth: no subhepatic tooth.

Chelipeds unequal: inner angle of wrists sharply pronounced, upper and outer surfaces of hands granular.

Legs slender, the longest pair are more than twice the length of the carapace.

Colours in spirit, carapace reddish-yellow, legs yellow.

In the Indian Museum is a single specimen, from the Andamans.

I identify this species with *P. cursor* on account of the long slender legs, the subquadrilateral carapace, the very short antero-lateral borders, and the broad front.

116. *? Pilumnus cærulescens*, A. M. Edw.

? Pilumnus cærulescens, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 242, pl. ix. fig. 3: L. Zehntner, Rev. Suisse Zool. II. 1894, p. 153.

Carapace etc. covered with short fur, with long hairs interspersed, about $\frac{4}{7}$ as long as broad, subquadrilateral, convex in anterior half, flat posteriorly: *the regions very distinctly defined by well cut grooves, the areolæ convex and studded with granules of good size.*

Front a third the greatest breadth of the carapace, deflexed, cut into two lobes the outer angles of each of which form independent dentiform lobes.

The upper orbital margin shows very faint traces of two shallow notches: a small triangular gap below the sharp, but non-spiniform, outer orbital angle.

Antero-lateral borders a good deal shorter than the postero-lateral, cut into three sharp teeth, in addition to which there is a small denticle behind and below the outer orbital angle.

Chelipeds unequal; upper and outer surfaces of wrists and of both hands closely and sharply granular, fingers very short, inner angle of wrists dentiform.

Legs stout, the longest pair not much more than two-thirds again the length of the carapace.

Colours in spirit, dull blue with a brownish tinge in places, fingers blackish brown.

In the Indian Museum is a single specimen from the Andamans.

I judge this species to be *P. cærulescens* by the Xanthodes-like form and sculpture of the carapace mentioned by Milne Edwards.

117. *? Pilumnus hirsutus*, Stimpson.

? Pilumnus hirsutus, Stimpson, Proc. Ac. Nat. Sci. Philad., 1858, p. 37: Miers, P. Z. S. 1879, pp. 20, 31: Haswell, Cat. Austral. Crust. p. 69: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, pp. 435, 437.

Carapace etc. covered with stiff hairs of two kinds—long and short, the former most numerous on the legs.

Carapace nearly $\frac{3}{4}$ as long as broad, convex in both directions, smooth when denuded, the regions hardly marked.

Front about a third the greatest breadth of the carapace, deflexed, cut into two lobes much like those of *P. vespertilio* in shape.

Upper orbital margin smooth, with two very faint and shallow notches; lower margin denticulate, with a gap just below the outer angle. No subhepatic tooth.

Antero-lateral border much shorter than the postero-lateral, with 4 spiniform teeth, one of which is the orbital angle.

Antennary flagellum of moderate length, without hairs, except at base.

Chelipeds unequal; borders of arm finely granular or denticulate, wrists with the upper and outer surfaces rough and the inner angle sharply pronounced; lower part of outer surface of larger hand smooth, the rest of this surface—like that of the smaller hand—sharply granular, the granules becoming spiniform towards the upper border.

Legs rather slender, the longest pair about two-thirds again as long as the carapace.

Colours in spirit, yellow, fingers light brown.

In the Indian Museum are 11 specimens, from the Andamans, Mergui, and the Malacca Str.

118. *? Pilumnus dorsipes*, Stimpson.

? Pilumnus dorsipes, Stimpson, Proc. Ac. Nat. Sci. Philad., 1858, p. 37.

Carapace *globose*, *extremely deep*, not very much broader than long, covered—like the chelipeds and legs—with soft, though stiff, hair, fairly well areolated, finely granular under a lens.

Front about a third the greatest breadth of the carapace, cut into two convex, rounded, finely denticulate lobes, of which the outer angles form dentiform lobules.

Upper orbital margin not prominent, the two notches are very faint and shallow (especially the inner one), but are recognizable: lower orbital margin with a deep narrow cleft just below the outer angle.

Antero-lateral margin cut into four denticulate spiniform teeth, one of which is the outer orbital angle. No subhepatic tooth.

Antennulary flagellum about a third the length of the carapace, not hairy, except at base.

Chelipeds unequal, both hands covered, on the outer surface and upper and lower borders, with prominent spiniform granules, which also extend some way along both fingers.

Legs rather short, the longest pair being about half again as long as the carapace.

Colours in spirit yellow.

The body is of such depth that the last pair of legs, even in the male, lie, in the normal inclination of the body vertically over the first pair.

In the Indian Museum is a single male from the Andamans.

119. *Pilumnus de Haanii*, Miers.

Pilumnus de Haanii, Miers, P.Z.S. 1879, pp. 20, 32; and Challenger Brachyura p. 155, pl. xiv. fig. 1: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1886-1890, p. 110.

Carapace covered with a very fine and short, but dense, fur: legs and chelipeds with a similar fur mixed with long fine hairs on outer surface of hands and on borders of legs.

Carapace transversely oval, not three-quarters as long as broad, the regions (when carapace is denuded) fairly well marked and areolated, granular towards the antero-lateral margins and near the front.

The front is nearer half than two-fifths the greatest breadth of the carapace, is nearly straight, not at all prominent, is finely denticulate, and emarginate in the middle line.

Orbital margin very finely denticulate, the upper border with two very inconspicuous notches, a fissure below the acute outer orbital angle.

Antero-lateral border a good deal shorter than the postero-lateral, cut into three shallow anteriorly-acuminate teeth.

Chelipeds unequal: the outer surface of the wrists with a few granules anteriorly and along the inner border: upper and outer surfaces of hands closely covered with acute spiniform tubercles which also extend far along the fingers.

Legs stout, unarmed.

Colours in spirit, golden yellow.

In the Indian Museum are 7 specimens from Palk Str. 28 specimens from off Ceylon, 26½ to 34 fms., only differ from the typical form in having the front more deeply emarginate in the middle line.

This species, but for the broader straighter front, and for the broader carapace, more nearly resembles an *Actumnus* than a *Pilumnus*.

120. *Pilumnus labyrinthicus*, Miers.

Pilumnus labyrinthicus, Miers, Zool. H. M. S. "Alert," pp. 183 and 224, pl. xxii., fig. C: and "Challenger" Brachyura, p. 161: A. O. Walker, Journ. Linn. Soc. Zool. XX, 1886–1890, p. 110; Henderson, Trans. Linn. Soc. Zool. (2), V, 1893, p. 365.

"In this curious form the surface of the carapace is everywhere covered with raised curved or sinuated ridges, which are separated by wide depressions; the body and legs are covered with a dense close brown pubescence; from most of the ridges and from the teeth of the antero-lateral margins of the carapace spring longer setæ, and the margins of the ambulatory legs are also fringed with longer hairs. The frontal lobes, which are scarcely separated as usual by a median notch, are rather broad, straight, and but little prominent; the antero-lateral margins are somewhat shorter than the postero-lateral, and are armed with three distinct teeth, that of the exterior orbital angle being obsolete. The orbital margin is somewhat thickened; the epistoma rather longer in proportion to its breadth than is usual. The basal antennal joint is short, scarcely attaining to the sub-frontal process, and not nearly reaching to the apex of the very prominent lobe at the inner suborbital angle. The chelipeds are rather small and (like the carapace) are densely pubescent, besides being clothed with longer hairs; the outer surface of the wrist or carpus is tuberculated beneath the hairy coat; the palm is clothed externally with long dense hairs; the upper margin of the palm bears three distinct tubercles; the fingers are slaty coloured, dentated on their inner margins and acute at their apices. The ambulatory legs are densely hairy and of moderate length."

Not in the Indian Museum collection.

121. *Pilumnus (?) lævis*, Dana.

Pilumnus lævis, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 82, and U. S. Expl. Expd. Crust. pt. i, p. 238; de Man, Journ. Linn. Soc. Zool. XXII, 1887–1888, p. 66, pl. iv. figs. 1 and 2: and Zool. Jahrb. Syst. VIII. 1895, p. 553.

"Near *P. levimanus*, but broader. Carapace smooth and shining, not areolate, rather convex: front emarginate, antero-lateral margin three-toothed, the teeth minute and like spines, the posterior much the smallest, outer angle of orbit not raised into a tooth. Anterior feet very unequal, carpus smooth, not even faint tuberculate; larger hand wholly smooth, smaller sparsely hirsute, not at all tuberculate. Posterior eight feet slender, somewhat hirsute."

A single specimen from Mergui. It appears to me doubtful that this species belongs to the genus *Pilumnus*.

122. *Pilumnus seminudus*, Miers.

Pilumnus seminudus, Miers, Zool. H. M. S. "Alert" pp. 183 and 222, pl. xxi. fig. C: "Challenger" Brachyura, p. 161: de Man, Journ. Linn. Soc. Zool. XXII, 1887–1888, p. 65.

"This species resembles *P. semilanatus* in having the gastric, cardiac, and branchial regions of the carapace smooth and naked; but it may be at once distinguished by the following characters:—The carapace is broader in proportion to its length, and its anterior parts clothed with a close velvety pubescence, which also extends over the upper and outer surface of the wrist and palm of the chelipeds; the two posterior teeth of the antero-lateral margins are more distinctly spiniform, the basal antennal joint does not nearly reach to the sub-frontal process; the granulations of the wrist and palm are much more inconspicuous, those of the outer surface of the palm appear, through the pubescence, to be arranged in four distinct longitudinal series; the ambulatory legs are slenderer."

A single small specimen in the Indian Museum, from Mergui, has been referred by Dr. de Man to this species.

Actumnus, Dana.

Actumnus: Dana, Silliman's Amer. Journ. Sci. and Arts, (2) XII. 1851, p. 128; and Proc. Acad. Nat. Sci. Philad. VI. 1852, p. 82; and U. S. Expl. Exp. Crust. pt. i. p. 243: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 284.

Carapace very little broader than long, convex, fairly well or very well areolated: the antero-lateral borders short, cut into teeth; the postero-lateral longer than the antero-lateral, concave.

Front from about a third to about two-fifths the greatest breadth of the carapace; cleft or notched in the middle line, or bilobed with the outer angles independent, usually separated from the supra-orbital angle by a notch or groove.

Orbits rather large, with one or two notches or fissures or suture-lines (which often, however, are indistinct) in the upper margin, and one (often, also, very indistinct) in the lower margin near the outer angle. The inner lower angle of the orbit is prominent, and often comes so near to the supra-orbital angle as to almost exclude the antennary flagellum from the actual orbital hiatus.

The basal antennal joint touches or nearly touches the front; the flagellum which is of moderate length (longer than the major diameter of the orbit) sometimes springs from the orbital hiatus, but is sometimes almost excluded from the hiatus.

The crests of the endostome, defining the expiratory channels, are

not very strong, and the anterior border of the merus of the external maxillipeds is not notched.

The chelipeds are stout, and are unequal in both sexes: the fingers, which are short and stout, are commonly defined as spoon-shaped at tip: they are not really so, but have the tips curved and blunt pointed.

The legs are stout and not very long.

The abdomen of the male consists of seven separate segments, and the first tergum is unusually long and narrow in all the typical species.

Most of the species of this genus, but not all, are densely tomentose: all, however, have hairy or tomentose legs.

Key to the Indian species of Actumnus.

I. Carapace tomentose:—
  i. Carapace areolated: front separated from the supra-orbital angle by a notch; antero-lateral border cut into 3 teeth (exclusive of outer angle of orbit):—
    1. Front normally bilobed: supra-orbital margin granular, with two distinct notches:—
      a. Carapace moderately convex, rather faintly areolate; outer angles of front hardly independent ..... *A. tomentosus.*
      b. Carapace strongly convex, strongly areolate; the outer angles of the front are small distinct little lobules:—
        x. Lateral gastric areolæ semicircular ..... *A. setifer.*
        y. Lateral gastric areolæ Ω shaped *A. verrucosus.*
    2. Front broadly triangular, with a deep button-hole cleft (the hole at posterior end) in the middle line: supra-orbital margin thin sharp, with a single deep very narrow fissure..... ..... *A. fissifrons.*
  ii. Carapace not areolated; front not separated from the supra-orbital angle; antero-lateral border with 7 spinuliform granules (3 pairs) and an odd one anteriorly ..... *A. elegans.*

II. Carapace perfectly bare:—
  i. Carapace not areolate, front broadly bilobed; legs almost bare ..... *A. nudus.*
  ii. Carapace very distinctly areolate, front with two median lobes and two (external) lobules: legs tomentose:—
    1. Surface of carapace (and of parts of chelipeds) formed of a mosaic of smooth flat polygonal granules in the closest contact ..... *A. tessellatus.*
    2. Surface of carapace, etc. covered with sharp crystalline granules in the closest contact ... *A. arbutum.*

123. *Actumnus tomentosus*, Dana.

Actumnus tomentosus, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 82; and U. S. Expl. Exp. Crust. pt. i. p. 243, pl. xiv. figs. 2a–c: A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 285, and IX. 1873, p. 194: ? Tozzetti, Magenta Crust. p. 56, pl. iv. figs. 22, 24, 26, 29: Haswell, Cat. Austral. Crust. p. 73: Etheridge, Mem. Austral. Mus. 1889, pp. 34, 36.

Carapace subcircular, rather more than $\frac{3}{4}$ as long as broad, moderately convex, covered with a very dense short smooth tomentum. Much the same tomentum covers the exposed surfaces of the legs and chelipeds (except the lower and distal part of the outer surfaces of the hands), and the legs are also fringed with long fine hairs.

The regions are fairly well delimited and areolated, the areolæ being moderately convex: on the undenuded carapace the areolæ are faint.

Front about two-fifths the greatest breadth of the carapace, cut into two finely denticulated lobes, the outer angles of each of which, though sharply separated from the supra-orbital margin, do not form distinct lobules.

Orbital margin finely denticulate, the lower more markedly so than the upper; in the upper margin are two broad notches, the outer the more distinct; in the lower margin, just below the outer angle, is a narrow fissure; outer orbital angle dentiform.

Antero-lateral borders about two-thirds the length of the concave postero-lateral, very regularly cut into 3 uniform teeth similar to the outer orbital angle.

Chelipeds unequal: arm smooth; inner angle of wrists sharp, their inner border finely beaded, a few scattered granules on their upper and outer surfaces; upper and outer surfaces of hands covered with pearly granules which become obsolescent or obsolete near the lower border of the larger hand; dactyli longitudinally grooved, beaded at base.

Denuded legs nearly smooth.

In the Indian Museum are 53 specimens, from the Andamans, the Orissa Coast up to 30 fms., Palk str. and Cheduba.

Our specimens completely agree with Dana's figure, and are easily distinguished from *A. setifer* by the less convex and less distinctly areolated carapace.

124. *Actumnus setifer*, (De Haan), A. M. Edw.

Pilumnus setifer, De Haan, Faun. Japon. Crust. p. 50, pl. iii. fig. 3 (*Xantho*).

Actumnus setifer, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 287, pl. xv. figs. 5–5b: Richters in Möbius' Meeresf. Maurit. p. 148: Miers, Zool.

H. M. S Alert, pp. 183, 225, 517, 533: de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 47, and Archiv. für Naturges. LIII. 1887, i. p. 262: Walker, Journ. Linn. Soc., Zool. XX. 1886–90, p. 110: Pocock, Ann. Mag. Nat. Hist. (6) V. 1890, p. 74: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 364: Ortmann, Zool., Jahrb. Syst. VII. 1893-94. p. 474.

Closely resembles *A. tomentosus*, from which it is distinguished by the following characters:—

The carapace is subglobular: the regions are very distinctly delimited and areolated, the areolæ being strongly convex and often uniformly granular.

The outer angles of the front form distinct little lobules: the fissure in the lower orbital margin, just below the outer angle, is indistinct.

The granules on the wrist are more numerous.

The more convex carapace and the more numerous and more convex areolæ, at once distinguish this species.

In the Indian Museum are 32 specimens from the Andamans, Ceylon up to 34 fms., Persian Gulf, Pedro shoal, and Mergui (besides 13 from Hongkong and 1 from Samoa).

The Indian specimens, especially those from deep water, have the lobules of the carapace more convex than those from Hongkong.

125. *Actumnus verrucosus*, Hndrsn.

Actumnus verrucosus, Henderson, Trans. Linn. Soc. Zool. (2), V, 1893, p. 364.

"The carapace is very convex, covered with a short brown pubescence, and provided with a series of remarkable granulated lobes. The frontal margin is granulated and four-lobed, the rounded prominent submedian lobes separated by a narrow median fissure, the outer lobes of small size. The antero-lateral margin has four prominent, subequal, granulated or subspinose lobes, while the postero-lateral margin is smooth and deeply excavated; the upper orbital margin is granulated and has two well-marked fissures. The granulated lobes on the carapace are arranged as follows:—On the anterior gastric region, behind the front, two pairs, of which the posterior is much larger; on the posterior gastric region three lobules, one median and anterior, two posterior; on each protogastric or lateral gastric region a peculiar Ψ-shaped lobule; on the cardiac region two lobules which are slightly excavated in the centre; on the branchial region three lobules, anterior, postero-external (which is the largest of the three), and a postero-internal one placed external to and between the posterior gastric and cardiac lobules."

"The right cheliped is slightly larger than the left in both sexes;

both are clothed with a short pubescence on the outer surface of the carpus and hand, except towards the base of the immobile finger. The carpus is sparingly tuberculate externally, with a sulcus running parallel to the articulation with the hand, and separated from the latter by a tuberculated strip: the outer surface of the hand is strongly tuberculate, the tubercles with more or less acute apices, rather closely crowded and without any definite arrangement. The fingers are short, with white and obtuse tips, and the immobile one is placed in a straight line with the lower border of the hand; the dactylus is tuberculated superiorly on its proximal half, and a prominent tooth is present on either finger. The ambulatory legs are simply pubescent. The abdomen is smooth and seven-jointed in both sexes. The external maxillipeds are smooth, with a faint impressed line in the middle of the proximal two-thirds of the ischium. The basal joint of the antennal peduncle is joined to the sub-frontal process, and the terminal joints lie in the orbital hiatus."

"The largest specimen (a male) has the carapace 18·5 mm. long and 25·3 mm. broad."

126. *Actumnus fissifrons*, n. sp.

Carapace and legs covered with a not very dense coat of hairs of two kinds—long and short—the long hairs most numerous on the legs; chelipeds with very little hair.

Carapace strongly convex in all directions, $\frac{3}{4}$ as long as broad, the regions distinctly delimited and areolated by smooth shallow grooves, the areolæ being slightly convex and more and less granular.

Front not quite a third the greatest breadth of the carapace, deflexed, broadly triangular, the apex with a deep button-hole fissure (the hole at the posterior end), the outer angles separated from the supra-orbital angles by a deepish notch.

Supra-orbital margin thin, sharp, very prominent, deeply fissured near the middle: infra-orbital margin thin, concave, fissured just below the outer angle.

Antero-lateral margin a little shorter than the postero-lateral, cut into three sharp-edged anteriorly-acuminate teeth (exclusive of the outer orbital angle): postero-lateral margin deeply concave.

Chelipeds markedly unequal: upper and outer surfaces of wrists with a few granules, most numerous anteriorly; upper and outer surfaces of both hands—including a great part of the fingers—studded with granules, of which many are enlarged conical or pearl-like, and those along the upper border are spiniform.

Colours in spirit bright orange yellow.

Off Ceylon, 26½–34 fathoms. Four specimens.

The carapace of the largest specimen is 21 millim. long and 28 millim. broad.

127. *Actumnus tessellatus*, n. sp.

Legs tomentose and hairy, chelipeds inconspicuously tomentose in parts, carapace bare.

The entire dorsal surface of carapace, the upper and outer surfaces of the wrists and the upper surface of the hands, have the form of an elegant mosaic of smooth polygonal tile-like granules in the closest possible contact everywhere.

Carapace strongly convex, ¾ as long as broad, regions well defined and subdivided by broad depressions, the areolæ strongly and somewhat angularly convex.

Front much less than a third the greatest breadth of the carapace; deeply cut into two prominent subfoliaceous median lobes, each of which is flanked externally by a small dentiform lobule.

Orbital margins smooth, not fissured, though there are narrow inconspicuous depressions where the notches exist in other species. The antennary flagellum springs from the orbital hiatus.

Antero-lateral margins thin, sharp, cut into 3 teeth (not including the orbital angle) the last 2 of which are subfoliaceous: postero-lateral margins a little longer than the antero-lateral, markedly concave.

Chelipeds little unequal: in addition to the mosaic ornamentation there are a few scattered pustulous granules on the wrist and upper surface of hand, and all the lower half of the outer surface of the hand is studded with pearl-like or bead-like granules, which are also found on the bases of the fingers.

The legs when denuded are smooth to the naked eye.

Colours in spirit: lavender grey, a good deal suffused with orange-pink, fingers cinnamon.

Carapace 15 millim. long, 20 millim. broad.

A male and a female from the Persian Gulf.

128. *Actumnus arbutum*, n. sp.

Legs with a somewhat scanty growth of hair not concealing their sculpture, chelipeds slightly hirsute in places, carapace bare.

The whole dorsal surface of carapace covered with sharp angular crystalline granules in the closest possible contact: much the same ornamentation is found on the upper and outer surfaces of the wrists and on the upper surface of the hands, the lower half of the outer surface of the hands being studded with pearly and bead-like granules.

Carapace $\frac{3}{4}$ as long as broad, strongly convex, profusely deeply and symmetrically puckered-areolate.

Front much less than a third the greatest breadth of the carapace, shaped as in *A. tessellatus*, but the edges of the lobes and lobules are crenulate.

Orbits and relations of antennæ as in *A. tessellatus*, but the edges of the orbits are sharply crenulate.

Antero-lateral margin cut into three sharply crenulate granular teeth—not including the orbital angle: postero-lateral margin shorter than the antero-lateral, concave.

Chelipeds a little unequal: fingers granular in the basal half or more.

Carpopodites and propodites of legs, and meropodite of last pair, sharply granular as to the dorsal surface.

Colours in spirit pink, fingers brownish.

Carapace 13·5 millim. long, 18 millim. broad.

A single male from off the coast of Sind, 51 fms.

129. *Actumnus elegans*, de Man.

Actumnus elegans, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 47.

Carapace and exposed surfaces of legs and chelipeds covered with a thickish bright-yellow tomentum, with longer hairs on chelipeds and legs and near frontal margin.

Carapace not much more than $\frac{2}{3}$ as long as broad, with some scattered comparatively large granules, but *with almost no indication of regions*; convex fore and aft, slightly so from side to side.

Front about a third the greatest breadth of the carapace, broadly triangular, notched at the apex, not separated from but *confluent with the supra-orbital angles*. There is a suture line in the lower orbital margin just below the outer angle.

Antero-lateral borders not shorter than the very concave postero-lateral, *armed with 7 acute spinuliform granules, in 3 pairs, with an odd one* between the first pair and the orbital angle.

Chelipeds unequal: the upper and outer surfaces of wrists and both hands, including a large part of the fingers closely studded with conical white granules.

In the Indian Museum are 2 specimens, one from Mergui the other from Kyuk Phyu Harbour.

This species seems to me to be better placed with *Pilumnus* than *Actumnus*: it and *Pilumnus scabriusculus* White, seem to be very closely related.

130. *Actumnus nudus*, A. M. Edw.

Actumnus nudus, A. Milne Edwards, Ann. Soc. Entomol. France, (4) VII. 1867 p. 265 : de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 49, pl. ii. figs. 3, 4.

Carapace almost completely bare, legs with only a few scattered hairs.

Carapace subcircular, convex, regions hardly indicated, studded with pearl-shaped granules in its anterior and antero-lateral parts, twelve of these granules are arranged in an arched line—convex forwards—on either side of the posterior end of the gastric region.

Front much advanced, divided into two rounded obliqne lobes, the outer angles of which are hardly separated from the supra-orbital angles.

Antero-lateral border divided into four teeth (not including the outer orbital angle).

Chelipeds unequal; upper and outer surfaces of hand covered with pearly granules, which also exist on the upper surface of the wrist.

Found at Pondicherry and Mergui.

Not represented in the Indian Museum collection.

This species seems to me to be improperly referred to *Actumnus*.

Alliance II. *Heteropanopioida.*

Heteropanope. Eurycarcinus. Nectopanope.

Heteropanope, Stimpson, de Man.

Heteropanope, (part) Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 35.

Heteropanope, (part) A. Milne Edwards, Ann. Sci. Nat., Zool., (4) XX. 1863, pp. 288, 289.

Pilumnopeus, (part) A. Milne Edwards, *loc. cit.*; and Ann. Soc. Entomol. France, (4) VII. 1867, p. 277.

Heteropanope, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 52.

Carapace moderately broad, moderately or little convex, with the regions little or hardly demarcated.

Antero-lateral borders shorter than the postero-lateral, cut into four lobes or teeth, of which the first is confluent with the outer angle of the orbit: postero-lateral borders moderately convergent, posterior border rather long.

Front moderately broad, between a fourth and a third the greatest breadth of the carapace, cut into two lobes, the outer angle of each of which is dentiform and separated from the supra-orbital margin by a notch.

A small triangular gap in the orbital margin just beneath the outer angle. The antennules fold nearly transversely.

Basal antennal joint short, not reaching the front; the flagellum, which is about equal in length to the major diameter of the orbit, lodged in the rather broad orbital hiatus.

The ridges of the endostome, defining the expiratory canals, are well marked, but the anterior border of the merus of the external maxillipeds is not notched. The buccal cavern is broader anteriorly than posteriorly.

Chelipeds unequal in both sexes; fingers rather short, pointed, not hollowed.

The abdomen of the male consists of seven separate segments.

Heteropanope closely resembles *Panopeus* (e.g. *P. herbstii*), but differs in having the crests of the endostome much more distinct, and all seven segments of the male abdomen separate.

Key to the Indian species of Heteropanope.

I. Carapace decidedly convex, both chelipeds perfectly smooth to the naked eye ..... *H. levis.*

II. Carapace almost flat, wrist and hand of smaller cheliped studded with vesiculous or pearly granules..... *H. indica.*

131. *Heteropanope indica*, de Man.

Heteropanope indica, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 53, pl. iii. figs. 1, 2.

Carapace more than two-thirds as long as broad, very little convex, surface somewhat granular and scantily tomentose near the margins. Gastric region and its three sub-regions faintly indicated. Two series, starting respectively from the 3rd and 4th teeth of the antero-lateral margins, of discontinuous wavy finely granular ridges cross the carapace transversely, fairly parallel with the common curve of the frontal and antero-lateral borders.

The finely granular orbital margin has the two grooves near the external angle, and the gap just below the external angle, distinct.

Antero-lateral border cut into four teeth, of which the first two are broad thin and compressed and the last two pointed and subpyramidal; the edges of all are finely granular.

Chelipeds and legs more or less tomentose. Chelipeds very unequal; a curved spine-like tooth at distal end of upper border of arm, and a spine at inner angle of wrist: upper and outer surface of smaller hand and wrist studded with vesiculous granules; larger hand quite smooth, very large, little shorter than the greatest breadth of the carapace.

Colours in spirit, dull earthy brown with a greenish tinge.

In the Indian Museum is a single specimen, from Mergui.

132. *Heteropanope lævis* (Dana).

Panopæus lævis, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 76, and U. S. Expl. Exp. Crust. pt. I. p. 180, pl. viii. figs. 13*a–c*: J. E. Benedict and M. J. Rathbun, P. U. S. Nat. Mus. XIV. 1891, p. 380.

Carapace two-thirds as long as broad, decidedly convex fore and aft, its surface perfectly smooth to the naked eye, and bald. The gastric region and its three sub-regions are as faintly as possible indicated, and the two broken series of transverse elevations present in *H. indica* are also present, but are much blunter smoother and fainter. The orbits are as in *H. indica*, but the margin is but microscopically granular.

The antero-lateral border is cut into four teeth, all of which are thin and compressed, and all but the first are sharply acuminate forwards.

The chelipeds are extremely unequal, and are perfectly smooth and bare: there is a denticle at the distal end of the upper border of the arm, and a stout sharp tubercle (often double-crowned) at the inner angle of the wrist. The greatest length of the larger hand, in the male, is about equal to the greatest breadth of the carapace, and its greatest height more than three-quarters the greatest length of the carapace: in the female this hand is not quite so large.

The edges of the last four joints of all the legs are scantily hairy in the male, but more profusely so in the female.

Colours in spirit; brownish yellow or dull green.

In the Indian Museum are 17 specimens from Karáchi and one from Bombay.

133. *Heteropanope eucratoides*, Stimpson.

Heteropanope eucratoides, Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 35: de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 56, pl. iii. figs. 3, 4.

This species is included by de Man in the Mergui fauna. There are no specimens in the Indian Museum. According to de Man it chiefly differs from *H. indica* in having the antero-lateral margins much shorter, and the 3rd tooth of the antero-lateral margin smaller than any of the others.

The chelipeds have a smooth surface.

Eurycarcinus, A. Milne Edwards.

Eurycarcinus, A. Milne Edwards, Ann. Soc. Entomol. France (4) VII. 1867, p. 276.

Eurycarcinus, de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 43.

Carapace broad, convex, perfectly smooth, without trace of regions.

Antero-lateral borders very much shorter than the postero-lateral, cut into four lobes or teeth, of which the first is confluent with the outer angle of the orbit: postero-lateral border moderately convergent, posterior border rather long.

Front broadish, nearly a third the greatest breadth of the carapace, obliquely deflexed, projecting a little beyond the orbits, straight and square cut, commonly emarginate in the middle line.

Orbits shallow, affording little concealment to the eyes, the upper margin entire, a gap in the lower margin, below the outer angle. The antennules fold quite transversely.

Basal antennal joint short, not reaching the front, the flagellum, which is long (much longer than the major diameter of the orbit), lodged in the orbital hiatus.

The ridges of the endostome, defining the expiratory canals, are well pronounced, but the anterior border of the merus of the external maxillipeds is not notched. Buccal cavern wider anteriorly than posteriorly.

Chelipeds unequal in both sexes, fingers pointed, not hollowed.

The abdomen of the male is seven-jointed.

Eurycarcinus is very closely related to *Heteropanope*, but is easily distinguished by the broad smooth convex carapace, the shallow and rather elongate orbits, and the very short antero-lateral margins.

Key to the Indian species of Eurycarcinus.

I. Thumb of the larger cheliped with a much-enlarged tooth at basal end:—
   1. Antero-lateral border less than ⅔ the length of the postero-lateral ..... *E. orientalis.*
   2. Antero-lateral border at least ⅔ the length of the postero-lateral ..... *E. maculatus.*

II. Thumb of the larger cheliped without a much-enlarged tooth at base ..... *E. grandidieri.*

134. *Eurycarcinus orientalis*, A. Milne Edwards.

Eurycarcinus orientalis, A. Milne Edwards, Ann. Soc. Entom. France (4) VII, 1867, p. 277: de Man, Notes Leyden Mus. XIV. 1892, p. 226.

Carapace rather over two-thirds as long as broad, perfectly smooth (except for an extremely fine and faint granular ridge that runs transversely inwards towards the gastric region from the last tooth of the antero-lateral margin), decidedly convex fore and aft and slightly so from side to side.

Front cut quite straight and square, slightly emarginate in the middle line.

Antero-lateral border cut into four thin shallow teeth, of which the first two are rounded and the last two are anteriorly acuminate, the first being the least prominent of all and the last being the smallest of all. The antero-lateral border is extremely short, a good deal less than two-thirds the length of the postero-lateral.

Supra-orbital margin entire, the infra-orbital finely denticulate.

Chelipeds markedly unequal, perfectly smooth, inner angle of wrist rather strongly pronounced; the hand and fingers are rather short and stout and the thumb of the larger cheliped is a good deal shorter than the hand and has a very strong tooth at its base.

The legs and under surface of the body are covered with a dense, extremely short scurfy tomentum.

Colours in spirit yellowish brown.

In the Indian Museum are four specimens, from Karachi, Bombay and the Andamans.

This species agrees in all respects with the descriptions and figures of *Eurycarcinus maculatus*, except in respect of the antero-lateral borders. These are so short that a line joining their posterior extremities would divide the carapace into two halves, of which the anterior would be much the smaller: the teeth of the antero-lateral border are also much shallower and less salient.

135. *Eurycarcinus grandidieri*, A. Milne Edwards.

Eurycarinus grandidieri, A. Milne Edwards, Ann. Soc. Entom. France, (4) VII. 1867, p. 277; and Nouv. Archiv. du Mus. IV. 1868, p. 80, pl. xix. figs. 13–16.

Carapace about two-thirds as long as broad, strongly convex fore and aft, slightly so from side to side, perfectly smooth to the naked eye.

Front cut square, emarginate in the middle line, the fore edge straight but sloping a little obliquely from the outer angles to the middle line. Supra-orbital margin entire, the infra-orbital obscurely denticulate.

Antero-lateral border as in *E. orientalis* but rather longer, its length being at least two-thirds that of the postero-lateral; the edges of all the teeth are a little thickened and granular.

Chelipeds unequal, perfectly smooth, inner angle of wrist pronounced: the hand is more elongate and narrower and the fingers are slenderer than in *E. orientalis*, and the thumb of the larger cheliped has no enlarged tooth at the base. The legs, the smaller cheliped, and the under surface of the body are covered with a dense, extremely short and fine tomentum.

Colours in spirit, yellowish brown.

In the Indian Museum is a single specimen from the Nicobars.

The chief difference between this species and *E. orientalis* and *maculatus* appears to be in form of the hand and fingers of the larger cheliped.

136. *Eurycarcinus maculatus*, (A. M. Edw.) de Man.

Pilumnopeus maculatus, A. Milne Edwards, Ann. Soc. Entom. France, (4) VII. 1867, p. 277; and Nouv. Archiv. du Mus. IV. 1868, p. 82, pl. xix. figs. 17–19.

Eurycarcinus maculatus, de Man, Journ. Linn. Soc. XXII, 1887-88. p. 44, pl. ii. figs. 2 and 3 (*not* 3 and 4).

The Mergui specimen described by de Man does not appear to be in the Indian Museum.

This species agrees with *E. orientalis* in the form of the chelipeds (hand and thumb), and appears to differ from that species only in having a longer and more deeply cut-up antero-lateral border.

Nectopanope, Wood-Mason.

Nectopanope Wood-Mason, Ann. Mag. Nat. Hist. March, 1891, p. 261.

Carapace broad, approaching the quadrilateral, convex fore and aft, the branchial regions so inflated and convex dorsally as to make the transverse plane of the carapace strongly concave in the middle line, the other regions obscurely defined, the surface smooth.

The antero-lateral borders are very much shorter than the postero-lateral, are very thin and sharp, and are cut into teeth of which the first is confluent with the outer orbital angle.

Front broad, a third the greatest breadth of the carapace, straight, square cut, slightly projecting beyond the supra-orbital angle, from which it is sharply cut off by an angular notch, on either side.

Orbits large, with a thin, sharp, prominent margin; a notch internal to the middle of the upper margin, the notch breaking this margin into two curves, one corresponding to the eye-stalk the other to the cornea: eyes large, reniform, on moderately stout stalks.

Antennules folding transversely. The basal antennal joint is very short, but almost touches the turned down side-edge of the front: the flagellum, which is considerably longer than the major diameter of the large orbit, springs from the rather broad orbital hiatus.

The buccal cavern is broader anteriorly than posteriorly, and the mouth parts do not nearly reach its front edge, so that a wide and permanent gap is left: the crests of the endostome are not very strong, but the free edge of the endostome corresponding to the efferent branchial channel, on either side, is deeply excavated. The outer wall of the efferent branchial canal forms a strong angular bulge in the pterygostomian region.

The chelipeds in the female are equal; the fingers are compressed and pointed, not hollowed.

The legs are long and slender, the propodite and dactylus of the last pair strongly compressed and a little broadened.

This form is most nearly related to *Eurycarcinus*.

137. *Nectopanope rhodobaphes*, Wood-Mason.

Nectopanope rhodobaphes, Wood-Mason, Ann. Mag. Nat. Hist. March, 1891, p. 261.

Carapace about $\frac{3}{4}$ as long as broad. Front extremely obscurely grooved in the middle line. Antero-lateral border cut into three thin sharp-edged teeth, of which the first is broad and rounded and confluent with the orbit, the second is broad and anteriorly acuminate, and the third almost spiniform.

Chelipeds smooth, in the female they are equal and are a little over $1\frac{3}{4}$ times the length of the carapace: arm with an acute spine near the far end of the upper border; inner angle of wrist acute, spiniform; fingers thin, compressed, pointed and hooked at tip, armed with thin laciniate teeth, the thumb very broad.

Legs thin, the first three pairs not much shorter than the chelipeds, with long compressed-styliform dactylus: the last pair a good deal shorter, with thin blade-like propodite and dactylus closely fringed with hair.

Colours in spirit uniform yellowish white: in life pink, with a dotted, **V**-shaped, white mark between the gastric and branchial regions.

In the Indian Museum is a single female specimen from off the Godávari coast 98–102 fms.

Nectopanope longipes, which was referred provisionally to this genus by Wood-Mason, who had insufficient material for examination, turns out, now that numerous good specimens have been dredged by the "Investigator," to be a Catometope.

Subfamily VII. Eriphiinæ.

Alliance I. *Eriphioida*.

Eriphia, Latr.

Eriphia, Latreille, Cuvier Règne An. (1) III. 18.

Eriphia, Desmarest, Consid. Gen. Crust. p. 125.

Eriphia, De Haan, Faun. Japon. Crust. p. 22.

Eriphia, Milne Edwards, Hist. Nat. Crust. I. 425.

Eriphia, Dana, Silliman's Journ. (2) XII. 1851, p. 128; and U. S. Expl. Exp. Crust. pt. I. p. 246.

Eriphia, Heller, Crust. Sudl. Europ. p. 74.

Eriphia, A. Milne Edwards, and Miss. Sci. Mex. Crust. p. 337.
Eriphia, Miers, Challenger Brachyura p. 162.

Carapace thick and deep, approaching a quadrilateral shape, very little convex or nearly flat, not remarkably broader than long, the regions except the gastric not demarcated.

Antero-lateral borders slightly curved, much shorter than the postero-lateral and meeting the latter, not at a strong angle as in most Cancrids, but at a very open and imperceptible angle; though spinate they are not cut into lobes.

The fronto-orbital border is extremely broad, much more than three-quarters the greatest breadth of the carapace; the front, which is therefore broad also, is strongly deflexed, is almost straight, and is cut into two broad lobes the outer part of each of which is broadly in contact—far beyond the limits of the antennal base—with a singularly broad prolongation of the infra-orbital plate. The orbits, which are deep and oval, are therefore completely closed and widely separated from the antennæ.

The basal antennal joint is very small short and broad; the flagellum is long, more than the major diameter of the large orbit. The antennules fold transversely.

The crests of the endostome, defining the expiratory canals, are strong, and the canal is completed below by the foliaceous process of the first maxillipeds, the anterior edge of that process being concave. The oblique anterior border of the merus of the external maxillipeds is not notched.

Chelipeds massive, unequal in both sexes; fingers stout, pointed, not hollowed.

The abdomen of the male has all 7 segments separate.

Key to the Indian species of Eriphia.

I. Carapace nearly ⅘ as long as broad, devoid of hair dorsally; front cut into blunt teeth:—
   1. Chelipeds smooth to the naked eye ..... *E. lævimana.*
   2. Hand and wrist of the smaller cheliped studded with tubercles ..... *E. smithii.*

II. Carapace only ⅘ as long as broad, with numerous scattered hairs; front not cut into teeth ..... *E. scabricula.*

138. *Eriphia lævimana*, Latr. Edw.

Eriphia lævimana, Guérin, Icon. R. A., Crust. pl. iii. fig. 1: Milne Edwards, Hist. Nat. Crust. I. 427: Dana, U. S. Expl. Exp. Crust. pt. I. p. 249, pl. xiv. figs. 7*a*–*c*: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 37: A. Milne Edwards, in Maillard's l'île Réunion, Annexe F. p. 5, and Nouv. Archiv. du Mus. IV. 1868, p. 71, and IX. 1873, p. 255: Heller, Novara Crust. p. 24: Hilgendorf in v. d. Decken's

Reisen Ost-Afr. III. i. p. 75, and MB. Ak. Berl. 1878, p. 797: Miers, P. Z. S. 1877, p. 135, and Ann. Mag. Nat. Hist. (5) V. 1880, p. 237, and Zool. H. M. S. Alert, pp. 517, 534, and Challenger Brachyura, p. 162: Tozzetti, Magenta Crost. p. 60, pl. v. figs. 1*a–c*: E. Nauck, Zeits. Wiss. Zool. XXXIV. 1880, p. 58 (*gastric teeth*): Richters in Möbius Meeresf. Maurit. p. 151: Haswell, Cat. Austral. Crust. p. 75: Muller, Verh. Ges. Basel VIII. 1886, p. 475: de Man, Journ. Linn. Soc., Zool., XXII. 1887-88, p. 68, and Archiv. f. Naturges. LIII. 1887, i. 327, and Zool. Jahrb. Syst. &c. VIII. 1894-95, p. 555: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 367: Ortman, Zool. Jahrb., Syst., VII. 1893-94, p. 480, and in Semon's Forschungsr. (Jena. Denk. VIII) Crust. p. 54: Zehntner, Rev. Suisse Zool. II. 1894, p. 161: Whitelegge, Mem. Austral. Mus. III. 1897, p. 137.

Eriphia trapeziformis, Hess, Archiv. für Naturges. XXXI. 1865, i. pp. 135, 171, pl. vi. fig. 4 (see de Man, Zool. Jahrb., Syst., II. 1887, p. 695).

Carapace nearly $\frac{4}{5}$ as long as broad: gastric region large, well demarcated and subdivided into three large subregions, its anterior part, like the anterior part of the branchio-hepatic regions, covered with small pearly and subsquamiform tubercles; the rest of the carapace smooth, but closely covered with very small vesiculous granules not plainly visible to the naked eye: the post-orbital groove is distinct, and behind it, parallel with the gastric region, on each side a small narrow areola is marked off.

The free edge of the frontal lobes is bluntly spinate: there is a blunt spine also at the lower inner angle of the orbit, and two or three at the outer angle of the orbit: and there are 5 or 6 blunt spines or spinules of decreasing size along the antero-lateral border.

Chelipeds almost smooth to the naked eye, though closely covered with small depressed vesiculous granules under the lens: upper border of arm denticulate at its distal end, where also the granules on the neighbouring part of the outer surface are plainly visible without a lens; the anterior border of the arm denticulate at its proximal end. The upper part of the inner surface of the wrist forms a distinct facet, the proximal angle of which is pronounced and the distal end of which is bounded by two or three blunt spines.

Legs stout, smooth; upper edge of merus denticulate and somewhat hairy, the lower edge with tufts of stiff hair: similar tufts of hair along upper edge of carpus and on all the edges and surfaces of the propodite; the greater part of the dactylus covered with short stiff hairs and longer bristles.

Colours in spirit dull maroon, with a bluish-green tinge on the postero-lateral parts of the carapace and on the walking-legs.

In the Indian Museum are 53 specimens, from the Andamans, Arakan coast, Mergui, Ceylon and Laccadives (besides 2 from Samoa).

139. *Eriphia lævimana* var. *Smithii*, Macleay, Hilgdf.

Eriphia smithii, Macleay, Ill. Ann. S. Afr. p. 60: Krauss, Sudafr. Crust. p. 36, pl. ii. fig. 3: Dana, U. S. Expl. Exp. Crust. pt. I. p. 251: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 37: A. Milne Edwards, Nouv. Archiv. du Mus. IV. 1868, p. 71: Hoffmann in Pollen and Van Dam, Faun. Madagasc., Crust. p. 6, pl. i. figs. 1*a–c*: Lenz and Richters, Abh. Senck. Ges. XII. 1881, p. 422: Ortmann in Semon's Forschungsr. (Jena. Denk. VIII) Crust. p. 54.

Eriphia lævimana var. *smithii*, Hilgendorf MB. Ak. Berl. 1878, p. 797: Miers, Ann. Mag. Nat. Hist. (5) V. 1880, p. 237, and Zool. H. M. S. Alert, pp. 517, 535: de Man, Archiv. f. Naturges. LIII. 1887, i. p. 327: ? ? Cano, Boll. Soc. Nat. Napoli, III. 1889, p. 210: A. O. Walker, Journ. Linn. Soc., Zool., XX. 1886–90, p. 110: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 481.

The variety *Smithii* differs from the typical *Eriphia lævimana* only in the sculpture of the chelipeds.

The upper and outer surfaces of the wrists and hands of the smaller cheliped are closely covered with miliary granules and are profusely studded with salient and subsquamous tubercles, which, on the lower half of the hand are arranged in longitudinal series.

The wrist and hand of the larger cheliped may be nearly smooth or may have a few scattered pustulous tubercles (as they are in most Indian specimens), or they may more nearly resemble the smaller cheliped in sculpture.

In the Indian Museum are 15 specimens from Karáchi, and one from the Mekran coast.

140. *Eriphia scabricula*, Dana.

Eriphia scabricula, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 82, and U. S. Expl. Exp. Crust. pt. I. p. 247, pl. xiv. figs. 5*a–b*: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 37: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 256: Hilgendorf, MB. Ak. Berl. 1878, p. 798: Richters in Möbius Meeresf. Maurit. p. 151: Lenz and Richters, Abh. Senck. Ges. XII. 1881, p. 422: Miers, Zool. H. M. S. "Alert," pp. 518, 535: de Man, Notes Leyden Mus. XII. 1890, p. 66, and Zool. Jahrb., Syst., VIII. 1895, p. 555: Ortmann, Zool. Jahrb., Syst., VII. 1893-94, p. 480: Whitelegge, Mem. Austral. Mus. III. 1897, p. 137.

Eriphia gonagra, Krauss (*nec* Edw.) Sudafr. Crust. p. 36.

Carapace $\frac{3}{4}$ as long as broad, grooved on the surface as in *E. lævimana*, closely covered anteriorly and laterally with sharpish subsquamiform granules among which are numerous soft but stiffish hairs.

Free edge of frontal lobes entire, microscopically beaded. A sharp tooth at the outer angle of the orbit only. Antero-lateral border with 4 or 5 sharp teeth of gradually decreasing size.

Upper and outer surfaces of wrists and hands closely covered with vesiculous granules and sharpish pearly tubercles with numerous hairs

between them, the tubercles on the smaller hand being in longitudinal series and the hairs thick there.

Legs smooth; the borders of the last four joints, specially the upper border, fringed with longish hairs.

Colours in spirit, warm light brown, the legs in good specimens cross-banded alternate dark and light brown.

In the Indian Museum are three specimens, from the Laccadives, the Andamans and Ceylon, (also one from Samoa)

Alliance II. Trapezioida.

Trapezia. Tetralia. Quadrella. Sphenomerus.

Trapezia, Latreille.

Trapezia, Latreille, Fam. Nat. p. 269, and Encyclop. Meth. x. 695.

Trapezia, Milne Edwards, Hist. Nat. Crust. I. 427.

Trapezia, Dana, Silliman's Journ. (2) XII. 1851, p. 128, and U. S. Expl. Exp. Crust. I. p. 252.

Trapezia, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 257 and Miss. Sci. Mex., Crust. p. 341.

Trapezia, Miers, Challenger Brachyura, p. 163.

Trapezia, Ortmann, Zool. Jahrb., Syst., X. 1897, p. 202.

Grapsillus, Macleay in Smith's Ill. Zool. S. Afr. p. 67.

Carapace approaching the quadrilateral, little convex, not much broader than long, smooth and without any trace of regions.

Antero-lateral borders much shorter than the postero-lateral, running backwards almost straight and parallel with one another, not therefore meeting the convex curved and convergent postero-lateral borders at any angle.

Fronto-orbital border extremely broad, about as extensive as the greatest breadth of the carapace. Front broad, horizontal, lamellar separated from the supra-orbital angle by a notch; cut into two lobes, of which both the inner and outer angles are pronounced: so that with the supra-orbital angle the front usually appears 6-toothed.

The orbits, which afford no concealment to the eyes and are large, are cut out of the antero-lateral angles of the carapace: their dentiform upper and lower inner angles are broadly in contact, so that the antennæ are widely excluded from the orbit: their margins are without fissures or sutures.

The antennules fold nearly transversely, but in most spirit specimens are extended beyond their fossæ. The basal antennal joint is slender and very short and does not nearly reach the front: the flagellum is very long, much longer than the major diameter of the orbit.

The crests of the endostome, defining the expiratory canals, are well developed and the canals are closed in below by the foliaceous process of the 1st maxillipeds: the anterior edge of the merus of the rather slender external maxillipeds is not notched.

The chelipeds are long and very massive and are sub-equal or not very unequal in both sexes: the arm usually projects a long way beyond the carapace, and has its anterior edge sharp and crest-like and serrate: the fingers have usually a thin and sharp cutting-edge, best marked on the immobile finger. Legs stout, of moderate length.

The abdomen of the male consists of 5 segments, the 3rd–5th being fused.

The species of *Trapezia* are found in the crevices of coral-stocks.

Key to the Indian species of Trapezia.

I. A distinct spine or tooth at the junction of the antero-lateral and postero-lateral borders of the carapace:—
  i. Lower border of hand sharp, entire:—
    1. Outer surface of hand, in its upper part at least, covered with a mass of fine tangled downy hairs ..... *T. cymodoce.*
    2. Outer surface of hand smooth and bald:—
      a. Carapace and appendages plain yellowish or reddish brown ..... *T. ferruginea.*
      b. Carapace (and sometimes also the upper surface of the hands) covered with an elegant meshwork of fine dark brown lines (a scurfy pubescence on outer surface of hand, occasionally) ..... *T. areolata.*
      c. Carapace and appendages every where covered with roundish red spots ..... *T. maculata.*
      d. Carapace covered with faintish brown spots, upper surface of hands with a network of brown lines ... *T. intermedia.*
  ii. Lower border of hand granular or bluntly serrulate: carapace, etc. covered with roundish red spots ..... *T. rufopunctata.*

II. Nothing more than an indistinct notch at the junction of the antero-lateral and postero-lateral borders: colours, in spirit, blackish brown ..... *T. digitalis.*

With the species of *Trapezia* the citations of the various writers are so extremely uncertain that I have given up the attempt to make them complete.

Ortmann, in *Zoologische Jahrbücher, Abth. für Systematik, etc.* X. ii.

1897, pp. 201–216, has published a little monograph of the group, in which full lists of citations will be found.

141. *Trapezia cymodoce*, (Herbst) Miers, de Man, Ortmann.

Cancer cymodoce, Herbst, Krabben III. ii. 22, pl. li. fig. 5.

Trapezia cymodoce, Savigny and Audouin, Descr. de l'Egypte, Crust. p. 85, pl. v. fig. 2: Miers, Ann. Mag. Nat. Hist. (5) II. 1878, pp. 408, 409: de Man, Notes Leyden Mus. II. 1880, pp. 177, 178, and Journ. Linn. Soc., Zool., XXII. 1887-88, p. 69: Ortmann, Zool. Jahrb., Syst. X. 1897, pp. 203, 204.

Trapezia hirtipes, Lucas in Jacquinot's Voy. Astrolabe, Zool. III. Crust. p. 44 pl. iv. fig. 14.

Trapezia cærulea, Heller, SB. Ak. Wien, XLIII. 1861, p. 348.

Trapezia dentata, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 261.

Carapace four-fifths as long as broad, slightly convex in both directions in the adult female, almost flat in the male, smooth and polished.

Front prominent beyond the supra-orbital angle, rather deeply cut into two lobes, each of which has the inner angle dentiform and still further prominent, and the outer angle (though rounded) sharply marked and separated by a deep notch from the dentiform supra-orbital angle.

Inner angle of lower edge of orbit acutely spiniform: outer angle of orbit acute.

Antero-lateral borders nearly parallel with one another or very slightly curved outwards, an acute procurved spine marks their junction with the postero-lateral borders.

Chelipeds sub-equal in both sexes: more than $2\frac{3}{4}$ times the length of the carapace in the adult male but not quite so long in the female: the arm, which projects far beyond the edge of the carapace, has the anterior border foliaceous and cut into numerous sharp teeth: inner angle of wrist sharp and prominent, but not usually spiniform: hands long and compressed, the upper and lower edges (especially the lower) both sharp, the upper part of the outer surface of the hand (and wrist also, in many cases) covered with silky wool; fingers compressed, the cutting-edges thin sharp and not much toothed.

Legs smooth, the dactylus with rather numerous silky bristles, which are also found scattered along both edges of propus and upper edge of carpus.

Colours in spirit yellowish or reddish brown, often very dark or livid on the carapace; distal two-thirds of fingers commonly dark brown.

In the Indian Museum are 37 specimens, from the Andamans, Nicobars, Mergui, Palk Straits and the Mekrán coast (besides 16 from other parts of the Indo-Pacific).

In some specimens the free edge of the frontal lobes is more or less crenulate: the outer angle of the orbit and the lateral epibranchial spine are sometimes blunt: the whole of the outer surface of the hand is sometimes pubescent, and the arm also.

The species can, however, always be recognized by the uniform colouration, the hairy outer surface of the hands, and the very prominent front.

142. *Trapezia ferruginea*, Latr., Miers, de Man, Ortmann.

Trapezia ferruginea, Latreille, Encycl. Meth. X. p. 695: Milne Edwards, Hist. Nat. Crust. I. 429: Heller, SB. Ak. Wien, XLIII. 1861 p. 349, pl. iv. fig. 40: Miers, Ann. Mag. Nat. Hist. (5) II. 1878, pp. 407, 408: de Man, Notes Leyden Mus. II. 1880, pp. 178, 179: Ortmann, Zool. Jahrb. Syst., X. 1897, pp. 202, 205.

Grapsillus subinteger, Macleay in Smith's Ill. Zool. S Afr., Annulosa, p. 67.

Trapezia cymodoce, Dana, U. S. Expl. Exp. Crust. pt. I. 257, pl. xv. fig. 5, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 260, and Miss. Sci. Mex. Crust. p. 342.

Trapezia miniata, Lucas in Jacquinot's Voy. Astrolabe, Zool. III. Crust. p. 43, pl. iv. fig. 10.

Trapezia subdentata, Gerstaecker, Archiv. für Naturges. XXII. 1856, i. p. 127.

Differs from *T. cymodoce*, which it closely resembles in form and colour, in the following particulars:—

(1) the front as a whole is not so prominent, and its constituent teeth, as well as the supra-orbital angle, are not so prominent, and deep-cut: the tooth at the lower inner angle of the orbit is not so sharp:

(2) the outer angle of the orbit and the lateral epibranchial spine are not nearly so spiniform in the adult:

(3) the upper border of the hand is not so sharp, and the outer surface of the hand is smooth, polished and quite hairless.

In the Indian Museum are 25 specimens, from the Andamans, Nicobars and Ceylon.

Trapezia ferruginea var. *intermedia*, Miers.

Trapezia rufopunctata var. *intermedia*, Miers, Challenger Brachyura, p. 168, pl. xii. fig. 2, 1886.

Trapezia, sp. Richters in Möbius, Meeresf. Maurit. p. 152, pl. xvi. fig. 13, 1880.

Differs from *T. ferruginea* only in colouration.

The carapace, legs, arms and wrists are covered with light brown rather blotchy spots, while the upper surface of the hands is marked by a network of fine brown lines.

Trapezia ferruginea var. *guttata*, Rüpp.

Carapace light brown, edge of front brick-red: chelipeds with a network of fine pinkish-brown lines: legs with small pink spots.

Twelve specimens have just been dredged by Dr. A. R. S. Anderson of the "Investigator," off Great Coco I. (Andamans).

A faded specimen could not be distinguished from *T. ferruginea*.

In the Indian Museum are 3 specimens, from Diamond Island (off C. Negrais, Burma).

The Museum also possesses one of the "Challenger" duplicates from Honolulu.

143. *Trapezia ferruginea* var. *areolata*, Dana.

Trapezia areolata, Dana, Proc. Acad. Nat. Sci. Philad. 1852, p. 83, and U. S. Expl. Exp. Crust. pt. I. p. 259, pl. xv. figs. 8*a–b* and 9: Heller, Novara Crust. p. 25: de Man, Archiv. für Naturges. LIII. 1887, i. p. 317, and Zool. Jahrb. Syst. VIII. 1894-95, p. 556: Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 366: Ortmann, Zool. Jahrb. Syst. VII. 1893-94, p. 485.

Trapezia reticulata, Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 37.

Trapezia areolata var. *inermis*, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 259, pl. x. fig. 6: Miers, Challenger Brachyura, p. 167: Zehntner, Rev. Suisse Zool. V. 1894, p. 157.

Trapezia ferruginea areolata, Ortmann, Zool. Jahrb., Syst., X. 1897, pp. 203, 206.

This species also differs from *T. ferruginea* only in colouration.

The carapace, and sometimes also the upper surface of the chelipeds, is covered by a very elegant honeycomb network of fine brown (in spirit) lines. Even in old spirit specimens this network can be made out, with a lens, on the carapace, though not on the chelipeds.

In many specimens of *T. areolata*, the upper part of the outer surface of the hand is covered with a very fine scurf-like pubescence.

In the Indian Museum are 52 specimens, from the Andamans, Nicobars, Ceylon and Mergui (besides 3 from other parts of the Indo-Pacific).

144. *Trapezia maculata* (Macleay) Dana.

Grapsillus maculatus, Macleay in Smith's Ill. Zool. S. Afr., Ann. p. 67.

Trapezia tigrina, Eydoux and Souleyet, Voy. Bonite, Vol. I. p. 232, pl. ii. fig. 4.

Trapezia maculata, Dana, U. S. Expl. Exp. Crust. pt. I. p. 256, pl. xv. figs. 4*a–d*: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 37, and Ann. Lyc. Nat. Hist., N. York, VII. 1862, p. 219: Streets, Bull. U. S. Nat. Mus. VII. 1877, p. 106: de Man, Archiv. für Naturges. LIII. 1887, i. p. 318, pl. xiii. fig. 2: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 366.

Trapezia rufopunctata var. *maculata*, Miers, Phil. Trans. Roy. Soc., Vol. 168, 1879, p. 487: Ortmann, Zool. Jahrb., Syst. VII. 1893-94 p. 484.

Trapezia ferruginea maculata, Ortmann, Zool. Jahrb., Syst., X. 1897, pp. 203, 206.

Differs from *T. cymodoce* in the following particulars:—

(1) the front as a whole is not so prominent, nor are its constituent teeth and the supra-orbital angle quite so deep-cut:

(2) the chelipeds are not much more than twice the length of the carapace in the male, the arm being shorter than in *T. cymodoce* and *ferruginea*; there is a strong spine at the inner angle of the wrist; the outer surface of the hand is smooth, polished and hairless:

(3) the carapace, chelipeds, legs, etc., are everywhere covered with well defined roundish red spots.

N.B. The lower border of the hand is sharp and entire (non-granular, non-serrulate).

In the Indian Museum are four specimens from Table Island (north of the Andamans).

145. *Trapezia rufopunctata* (Herbst) Latr., Ortmann.

Cancer rufopunctatus, Herbst, Krabben III. i. 54, pl. xlvii. fig. 6.

Trapezia rufopunctata, Latreille, Encyclop. X. p. 695: Dana, U. S. Expl. Exp., Crust. pt. I. p. 255, pl. xv. figs. 3*a–b*: Lucas in Jacquinot's Voy. Astrolabe, Zool. III. Crust. p. 41, pl. iv. fig. 8: Gerstaecker, Archiv. für Naturges. XXII. 1856, i. p. 123: Heller, SB. Ak. Wien, XLIII. 1861, p. 350: A. Milne Edwards, Nouv. Archiv. du. Mus. IV. 1868, p. 71, and IX. 1873, p. 258, and Miss. Sci. Mex. Crust. p. 342: Hilgendorf in v. d. Decken's Reisen Ost-Afr. III. i. p. 75, pl. ii. fig. 3: Kossman, Reise roth. Meer., Crust. p. 42: Miers, Challenger Brachyura, p. 167: de Man, Archiv. für Naturges. LIII. 1887, i. p. 318, pl. xiii. figs. 1, 2: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 366: Ortmann, Zool. Jahrb., Syst. VII. 1893-94, p. 484, and X. 1897, pp. 205, 207, and in Semon's Forschungsr. (Jena. Denk. VIII.) Crust. p. 52: Zehntner, Rev. Suisse Zool. II. 1894, p. 157.

Trapezia acutifrons, A. Milne Edwards, Ann. Soc. Entom, France, (4) VII. 1867, p. 281.

Differs from *T. cymodoce* as follows:—

(1) though the front is of the same general form, the edge of each frontal lobe is somewhat angularly excised and the outer angle is angularly acute (not rounded) and is produced to or even beyond the level of the dentiform inner angle of each lobe:

(2) the inner angle of the wrist is more acute and spiniform, the upper border of the hand is rounded and the outer surface smooth polished and hairless, and the lower border of the hand is granular or bluntly serrulate:

(3) the carapace, chelipeds and legs are covered with rather large red spots.

In the Indian Museum are 5 specimens from Ceylon.

146. *Trapezia digitalis*, Latr.

Trapezia digitalis, Latreille, Encycl. Meth. X. 696: Milne Edwards, Hist. Nat. Crust. I. 429: Heller, SB. Ak. Wien, XLIII. 1861, p. 352: Kossmann, Reise roth. Meer., Crust. p. 42: de Man, Notes Leyden Mus. II. 1880, p. 177: Ortmann, Zool. Jahrb. Syst. X. 1897, pp. 203, 208.

Trapezia leucodactyla, Rüppell, 24 Krabben roth. Meer. p. 28.

? Trapezia fusca, Lucas in Jacquinot's Voy. Astrolabe, Zool. III. Crust. p. 45, pl. iv. fig. 17.

Carapace about five-sixths as long as broad, but having a broader look, owing to the less marked projection of the front and the greater

curvature and convergence of the postero-lateral borders; its surface smooth and burnished.

The front is slightly notched in the middle line, and is separated from the hardly-dentiform supra-orbital angles by a shallow notch: it is thus rather obscurely divided into two lobes, each of which has the free edge finely denticulate. Outer angle of orbit acute, as is also the inner angle of the lower margin.

There may be a slight notch at the junction of the antero-lateral and postero-lateral borders, but there is never a spine.

Chelipeds subequal in both sexes, about twice the length of the carapace, smooth and burnished. The arm is much shorter than it is in *T. cymodoce* and *ferruginea*, being broader than long, its foliaceous anterior border dentate or crenate; inner angle of wrist acute; upper border of hand rounded, lower border sharp.

Legs smooth, dactylus with a few bristles, which are almost absent from the other joints.

Colours in spirit, blackish-brown, fingers, lower edge of hand and distal ends of leg joints lighter.

In the Indian Museum are six specimens from Ceylon and Palk Straits.

Tetralia, Dana.

Tetralia, Dana, Silliman's Journ. Sci. and Arts (2) XII. 1851, p. 128, and Proc. Ac. Nat. Sci. Phila., 1852, p. 83, and U. S. Expl. Exp. Crust. pt. I. p. 261.
Tetralia, Heller, SB. Ak. Wien, XLIII. 1861, p. 353.
Tetralia, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 261.

Closely resembles *Trapezia* in form, and only differs in the following characters:—

The front is hardly separated from the hardly-dentiform supra-orbital angle by a small and very inconspicuous notch, and has its free edge very slightly convex, very faintly sinuous or straight (instead of being divided into lobes or teeth), and finely denticulate.

The antero-lateral borders are usually continued into the postero-lateral without any trace of a spine or notch to mark their junction.

The eyes are smaller.

The chelipeds are usually remarkably unequal; the arms are shorter and their expanded anterior edge is not denticulate throughout.

The meropodites of the legs are short and broad, almost foliaceous.

The abdomen of the male consists of seven separate segments.

147. *Tetralia glaberrima* (Herbst.)

Cancer glaberrimus, Herbst, Krabben I. ii. 262 pl. xx. fig. 115.
Trapezia integra, Latreille, Encycl. Meth. x. p. 696.

Trapezia glaberrima, Krauss, Sudafr. Crust. p. 35.

Tetralia glaberrima, Dana, U. S. Expl. Exp. Crust. pt. i. p. 263, pl. xvi. fig. 3: Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 38: A Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 262: Kossmann, Reise roth. Meer. Crust. p. 46: Lenz and Richters, Abh. senck. Ges. XII. 1881, p. 422; de Man, Archiv. für Naturges. LIII. 1887, i. p. 321: J. R. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 366: Ortmann. Zool. Jahrb., Syst., VII. 1893-94, p. 485, and X. 1897, p. 209, and in Semon's Forschungsr. (Jena. Denk. VIII.) Crust. p. 53: Zehntner, Rev. Suisse Zool. II. 1894, p. 157.

Tetralia nigrifrons, Dana, Proc. Ac. Nat. Sci. Philad. 1852, p. 83, and U. S. Expl. Exp. Crust. pt. i. p. 262, pl. xvi. figs. 2*a–d*: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 262: Hilgendorf, MB. Ak. Berl. 1878, p. 798.

Trapezia serratifrons, Lucas in Jacquinot's Voy. Astrolabe, Zool., III. Crust. p. 47, pl. iv. fig. 20.

Tetralia lævissima, Stimpson, Proc. Ac. Nat. Sci. Philad. 1858, p. 38.

Tetralia cavimana, Heller, Abh. zool.-bot. Ges Wien. XI. 1861, p. 14, and SB. Ak. Wien. XLIII. 1861, p. 353, pl. iii. figs. 24, 25, and Novara Crust. p. 26: Miers, Phil. Trans. 168, 1879, p. 488, and Zool. H. M. S. Alert, pp. 518, 537: de Man. Notes Leyden Mus., II. 1880, p. 180: R. I. Pocock, Ann. Mag. Nat. Hist. (6) V. 1890, p. 73: Whitelegge, Mem. Austral. Mus. III. 1897, p. 138.

Tetralia heterodactyla, Heller, Abh. zool.-bot. Ges. Wien. XI. 1861, p. 14, and SB. Ak. Wien. XLIII. 1861, p. 354.

Carapace about five-sixths as long as broad, flat smooth and shiny, with occasionally a faint short and distant pubescence near the frontal and lateral margins.

The front is finely and evenly denticulate, is almost straight, and is generally but not always separated from the similarly denticulate supra-orbital angle by a slight and inconspicuous break. The lateral borders are very slightly curved in their anterior half and are moderately convergent in their posterior half: they show no trace of a spine or notch, at least in the adult.

The chelipeds are very unequal both in length and bulk in both sexes, but even more so in the male than in the female.

In the male the larger cheliped is a good deal more and the smaller a good deal less than twice the length of the carapace: in the female the larger is about $1\frac{3}{4}$ times and the smaller about $1\frac{1}{3}$ times the length of the carapace.

The arm has the distal end of its anterior border expanded and finely denticulate: a little down and a few hairs are present on the outer surface of the wrist hand and finger, especially in the larger cheliped.

At the base of the larger hand, on the upper part of the outer surface, is a roundish pit of variable size and depth and usually full of hair.

The legs are rather short and stout and end in a curious little

coarse blunt claw: the meropodites are singularly broad and flat: the dactyli and propodites have both edges, and the carpopodites the upper edge, somewhat hairy.

Colours in spirit rather variable: sometimes uniform yellow or brown, usually the edge of the front and of the anterior part of the lateral margin is darker—almost black; occasionally the ends of some of the leg-joints have a black spot, and sometimes the legs are broadly banded yellow and blackish-brown.

In the Indian Museum are 78 specimens, from the Andamans, Mergui, Ceylon, the Maldives and the Mekrán coast.

In some but not in all young specimens there is a small lateral spine placed far forward on either lateral border of the carapace.

Quadrella, Dana.

Quadrella, Dana, Silliman's Amer. Journ. Sci. and Arts (2) XII. 1851, p. 128, and Proc. Ac. Nat. Sci. Philad. 1852, p. 84, and U. S. Expl. Exp. Crust. pt. i. p. 265.

Quadrella, A. Milne Edwards, Miss. Sci. Mex. Crust. p. 344.

Carapace squarely hexagonal, nearly as long as broad, moderately convex, perfectly smooth without trace of regions.

The antero-lateral borders, which are about equal in length to the postero-lateral, are straight, slope very slightly outwards, and join the postero-lateral at a very wide, but distinct, angle, marked usually by a spine.

The fronto-orbital border is about equal in extent to the greatest breadth of the carapace, and the broad almost horizontal front is cut into four acute spines, external to which, on either side, is seen the acute spiniform internal angle of the lower edge of the orbit projecting beyond the acute supra-orbital angles; so that the front is commonly spoken of as six-spinate.

The orbits, which are small and are cut out of the antero-lateral angles of the carapace, afford no concealment to the eyes: their upper and lower inner angles are in contact so as to exclude the antennæ.

The antennules fold almost transversely. The basal antennal joint is slender and does not nearly reach the front; the flagellum is slender and long—nearly half the length of the carapace.

The crests of the endostome are distinct and the expiratory canals are closed in as in *Trapezia*, etc.

The chelipeds are massive but are of great length, the whole of the long arm projecting beyond the edge of the carapace: they are subequal, or not markedly unequal, in both sexes.

Legs long and slender, the dactyli strongly and evenly serrated along the inner edge.

The abdomen of the male consists of 5 segments, the 3rd–5th being fused together.

The species of this genus inhabit stocks of corals and Alcyonarians.

148. *Quadrella coronata*, Dana.

Quadrella coronata, Dana, Proc. Acad. Nat. Sci. Philad., 1852, p. 84, and U. S. Expl. Exp. Crust. pt. i. p. 266, pl. xvi. figs. 5*a–d*: Ortmann, Zool. Jahrb. Syst. X. 1897, p. 210.

Trapezia sp. Miers, Zool. H. M. S. Alert, p. 536, footnote, (see Challenger Brachyura, p. 163 footnote).

Carapace squarely hexagonal, moderately convex, perfectly smooth, polished, about as long as broad. An acute procurved spine at the open angle of junction of the antero-lateral and postero-lateral borders.

Front with 6 horizontal spines, the four larger of which belong to the front proper, the other two being at the lower inner angles of the orbits which are much more prominent than the also spiniform upper inner angles.

Outer angle of orbit acute: eyes small, the diameter of the cornea about a tenth the length of the carapace.

Chelipeds smooth and polished, about $2\frac{3}{4}$ times the length of the carapace, the arm and the palm each being nearly as long as the carapace. The whole arm, as well as the end of the ischium, visible, from above, beyond the carapace; an acicular spine at the inner angle of the ischium and from six to ten such spines along inner (anterior) border of arm; one, or two, little spines sometimes, but not always, present at inner angle of wrist: lower border of hand quite smooth.

Legs long slender, about $1\frac{3}{4}$ times the length of the carapace: a few silky hairs on dactylus and propodite, and sometimes a very few on the carpus also: the inner edge of the dactylus strongly toothed.

Colours in spirit, milkwhite.

In the Indian Museum are 9 specimens from various parts of the Indian coasts and islands and from depths of 28 to 88 fathoms (one specimen from ? 7 fathoms).

Quadrella coronata var. *maculosa*, nov.

Differs from the typical form in the following particulars:—

(1) the greatest breadth of the carapace is distinctly more than the greatest length (including frontal spines):

(2) the chelipeds, under a lens, are frosted over with tiny granules: the anterior border of the arm is finely denticulate, with 2 or 3 spines at the distal end only; the inner border of the hand and thumb is finely denticulate:

(3) the carapace is closely covered with tiny purple (in spirit) dots, except for a very distinctly defined **W**-shaped white area stretching across its posterior half: the legs, sternum and abdominal terga are less closely covered with similar purple specks: chelipeds white.

Length of carapace 7 millim., breadth 8 millim.

In the Indian Museum are a male from off Table I. (Andamans) 15–35 fms., and a female from off the Andamans, 20 fms.

Quadrella coronata, var. *reticulata*, nov.

Differs from the typical form in the following particulars:—

(1) the carapace is distinctly broader than long:

(2) the chelipeds in the male are only about $2\frac{1}{2}$ times the greatest length of the carapace, and under the lens are more or less frosted over with granules: the anterior border of the arm is serrate, the inner border of the hand and thumb is finely denticulate:

(3) the carapace is symmetrically traversed by several fine purple-brown lines which intersect to form a regular and wide meshwork, and there is an irregular meshwork of similar coloured lines on the hands.

Length of carapace 7 millim., breadth 8 millim.

In the Indian Museum are a male from the Andamans, taken on a *Spongodes*, and two from off Ceylon 34 fms.

149. *Quadrella boopsis*, n. sp.

Differs from *Q. coronata* in the following particulars:—

(1) the chelipeds in the male are only about twice the greatest breadth of the carapace:

(2) the arm is stout, is only about three-fifths the greatest length of the carapace, and has its anterior border serrated, not spiniferous:

(3) the eyes are large, their diameter being about one-fifth the greatest length of the carapace:

Colours in spirit uniform yellowish.

Length of carapace equal with the breadth, which is 5 millim.

In the Indian Museum are a male and a female from the Arakan coast 20–30 fms.

This species is not the young of *Q. coronata*, which has the long slender arm and small eyes of the adult.

SPHENOMERUS, Wood-Mason.

Sphenomerus, Wood-Mason, Ann. Mag. Nat. Hist. March 1891, p. 263.

Carapace transversely oval or subcircular, the front and antero-lateral margins forming together a semicircle; markedly convex in both directions, perfectly smooth, without trace of regions.

Antero-lateral borders shorter than the postero-lateral—a spinule at their point of junction.

Front somewhat deflexed, broad and broadly bilobed. Orbits affording little or no concealment to the eyes, without fissures or sutures: there is a gap between the front and the inner angle of the orbit in which the antennary flagellum is lodged. The fronto-orbital border, in the adult, is not quite $\frac{1}{3}$ the greatest breadth of the carapace.

The antennules fold nearly transversely: the basal antennal joint does not reach the front, the flagellum is a good deal longer than the major diameter of the orbit.

The buccal cavern is a little narrowed anteriorly. The crests of the endostome are very faint, but to make up for this the anterior edge of the buccal cavern is puffed out and is very deeply excised on either side of the middle line; the anterior margin of the foliaceous process of the 1st maxillipeds is also excised to correspond, and so a permanent expiratory orifice is formed, which is very large and prominent beyond the almost transverse anterior edge of the merus of the external maxillipeds.

The chelipeds are stout, very long and not very unequal; the whole of the arm projects beyond the edge of the carapace: the fingers are somewhat compressed and are pointed.

The legs are rather slender.

The abdomen of the male consists of five pieces, the 3–5th somites being rigidly united but without obliteration of sutures.

150. *Sphenomerus trapezioides*, Wood-Mason.

Sphenomerus trapezioides, Wood-Mason, Ann. Mag. Nat. Hist. March 1891, p. 263: Ill. Zool. Investigator, Crust. pl. v. fig. 2 (where the carapace is drawn a little too broad).

Carapace about $\frac{4}{5}$ as long as broad, convex in all directions, smooth, polished.

The front is about $\frac{1}{3}$ the greatest breadth of the carapace, is obliquely deflexed, and is divided into two rather shallow broadly-rounded lobes the free edge of which is entire.

The supra-orbital angle is not defined, but the dentiform or spiniform angle of the lower edge of the orbit can be seen from above.

The antero-lateral margins form with the front a semicircular curve, each carries three sharp spinules, namely, one at the outer angle of the orbit, one at the junction with the postero-lateral border and one exactly intermediate between the other two.

The chelipeds are a little, but not very remarkably, unequal: the larger one is about $2\frac{1}{2}$ times the length of the carapace. Their surface is smooth and polished. The arm, the whole of which is visible beyond

the carapace, has much the same shape as in *Trapezia*, but its anterior border, though serrated, is not expanded; the lower border of the hand is sharp and somewhat dilated posteriorly, as in *Trapezia*: the inner angle of the wrist is rounded, but sometimes carries a small spinule.

The legs are slender smooth and polished, and have a few hairs distally.

Colours in spirit yellowish white, fingers sometimes blackish in their basal half.

Length of carapace of largest specimen 9 millim., breadth 11 millim.

In the Indian Museum are 11 specimens from the Andaman Sea at depths between 130 and 290 fms.

Alliance III. *Domecioida.*

Domecia, Eydoux and Souleyet.

Domecia, Eydoux and Souleyet, Voy. Bonite, Crust. Zool. vol. i. p. 234: Lucas in Jacquinot's Voy. Astrolabe, Zool. vol. iii. Crust. p. 48.

Domaecius, Dana, Silliman's Amer. Journ. Sci. and Arts, (2) XII. 1851, p. 128, and U. S. Expl. Exp. Crust. pt. i. pp. 230, 251.

Domecia, A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 263, and Miss. Sci. Mex. Crust. p. 345.

? Neleus, Desbonne and Schramm, Crust. Gaudaloupe, p. 35.

Carapace somewhat oval transversely but much contracted posteriorly, flat, somewhat hairy, with no trace of regions.

The fronto-orbital border is not much less than the greatest breadth of the carapace. The front is profusely spinate, the spines being sharp, a little curved, and falling into about six tufts or groups separated by more or less well-marked intervals.

The antero-lateral borders pass backwards with but little outward slope: they are a little shorter than the concave and convergent postero-lateral borders, and are armed with numerous sharp curved spines.

The orbits are at the antero-lateral angles of the carapace and do not conceal the eyes, their edge shows no fissures or sutures: their upper and lower inner angles are broadly in contact, or almost in contact, so as to exclude the antennæ.

The antennules fold nearly transversely. The basal antennal joint hardly reaches the front, though its outer angle is produced towards the front: the flagellum is short—hardly as long as the orbit.

The buccal cavern is broad: the crests of the endostome are not very strong; nor is the foliaceous process of the 1st maxillipeds produced far forwards: the external maxillipeds are very large, and the merus is remarkably broad and short.

The chelipeds are somewhat unequal, and are short and not very massive: the arm is almost entirely hidden by the carapace: fingers compressed, pointed.

The legs are stout, especially the meropodites.

The abdomen of the male has all 7 segments distinct and separate.

151. *Domecia hispida*, Eydoux and Souleyet.

Domecia hispida, Eydoux and Souleyet, Voy. Bonite, Zool. vol. i. p. 235, pl. ii. figs. 5–10: Dana, U. S. Expl. Exp. Crust. pt. I. p. 251: Lucas in Jacquinot's Voy. Astrolabe, Zool. vol. iii. Crust. p. 50, pl. iv. fig. 3–7: Stimpson, Bull. Mus. Comp. Zool. II. 1870-71, p. 145: A. Milne Edwards, Nouv. Archiv. du Mus. IX. 1873, p. 263, and Miss. Sci. Mex. Crust. p. 345, pl. lviii. fig. 2 (not good): de Man, Archiv. für Naturges. LIII. 1887, i. p, 326: Ortmann, Zool. Jahrb., Syst. VII. 1893-94, p. 478.

? Neleus acanthophorus, Desbonne and Schramm, Crust. Guadaloupe, p. 35.

? Eupilumnus websteri, Kingsley, Proc. Ac. Nat. Sci. Philad. 1879, p. 397, pl. xiv. fig. 3.

Carapace covered with light-coloured hairs: antero-lateral border with five or six (including the orbital angle) acute dark-tipped spines, and several similar spines on the carapace just inside the antero-lateral border, and also just inside the spiny fronto-orbital border. The orbital margin and the prominent edge of the epistome are finely denticulate.

Merus of the external maxillipeds extremely broad and short, with an elevated patch of denticles on its outer surface.

Chelipeds a little unequal, the larger one is not very much longer than the carapace: the arm, wrist, hand and dactylus are all studded with acute spines.

Legs stout, not very much shorter than the chelipeds: the anterior surface of the last four joints fringed with hairs, and the anterior edge of the merus spinate, as also, but much less distinctly, is the anterior edge of the carpus and propus.

Colours in spirit, yellow with brown blotches on the carapace and chelipeds and indistinct dusky cross-bands on the legs.

In the Indian Museum are a male and female from off Little Andaman I., 10 fms., and two females from Great Coco I.

Alliance IV. *Melioida.*

Melia, Latreille, Edw.

Melia, Latreille, Encycl. Meth. X. 705.

Melia, Milne Edwards, Hist. Nat. Crust. I. 431.

Melia, Dana, Silliman's Journal (2) XII. 1851, p. 128, and U. S. Expl. Exp. Crust. pt. I. p. 242.

Carapace rather depressed and narrow, hexagonal, not concealing the first $2\frac{1}{2}$ or 3 abdominal terga even in the male, the regions not, or fairly distinctly, delimited.

Fronto-orbital border more than $\frac{3}{4}$ the greatest breadth of the carapace. Orbits very shallow, affording little concealment to the eyes. Antennules folding obliquely.

Basal antennal joint slender, of good length but yet hardly touching the front; the flagellum very long (half the length of the carapace, or more), lodged in the orbital hiatus.

Chelipeds slenderer and much shorter than the walking-legs, the hand often hidden in a matted tuft of hair.

Walking-legs long and stout, *the third pair the longest of all.*

External maxillipeds somewhat slender and almost subpediform.

Both the Indian species of this genus differ from *Melia tessellata* (of which there are several specimens in the Indian Museum collection) in having the carapace rugulose, the antero-lateral border crenulate, the front more prominent, and the regions fairly well delimited and areolated.

152. *Melia cæstifer*, n. sp.

Carapace hexagonal, about as long as broad, rugulose or tuberculous, somewhat pubescent posteriorly and laterally, the regions fairly well defined and areolated.

Front broad, sublaminar, square-cut, horizontal but on a lower plane than the gastric region.

Antero-lateral border cut into three blunt lobes, the first of which is confluent with the outer orbital angle.

Antennary flagellum very long.

Chelipeds extremely slender; hand hidden in a tuft of adherent hair, which has to be removed before the slender hooked fingers can be seen.

First pair of legs somewhat more slender than the others, and shorter than the last pair; the second and third pair stouter and longer than the others, the third pair being the longest and the stoutest (especially as to the merus) of all. All the legs are more or less pubescent.

The abdomen of the male consists of 5 segments, the 3rd–5th being fused.

Colours in spirit, white, the bases of all the rugosities or tubercules defined by more or less circular very fine dark lines.

Length of carapace barely 4 millim., breadth hardly over 4 millim.

In the Indian Museum are a male and a female from off Ceylon, 34 fms.

153. *Melia pugil*, n. sp.

Differs from *M. cæstifer* (females compared) in the following characters:—

(1) the carapace is distinctly broader than long:

(2) the regions though as well defined are not nearly so much broken up into tubercles:

(3) just behind the 3rd tooth of the antero-lateral margin is a distinct indentation, making the anterior end of the postero-lateral border dentiform:

(4) the chelipeds are distinctly stouter and the hand is concealed in a fleshy glove:

(5) the first pair of legs is as stout as the fourth.

Length of carapace 5 millim., breadth 7 millim.

Colours in spirit, white, with a wider and more angular network of fine dark lines.

In the Indian Museum is a single female from off Ceylon, 26½ fms.

Appendix to Hyperolissa?

Platypilumnus, Wood-Mason.

Platipilumnus, Wood-Mason MS., Alcock, Ann. Mag. Nat. Hist. May 1894, p 401.

Carapace hexagonal—the prominent bilaminar horizontally-projecting front forming the shortest side of the hexagon—thin, depressed, perfectly flat, with the regions and subregions very faintly impressed: the antero-lateral borders are spinate, the postero-lateral are slightly convergent, and the posterior border is long.

Front about a third the greatest breadth of the carapace. Upper margin of orbit spinate, the inner angle of the lower margin acutely spiniform.

The antennules fold transversely. The basal antennal joint, though of fair length, does not reach the front; the next joint lies loosely in the wide orbital hiatus; the antennary flagellum is long, about twice the major diameter of the orbit.

Buccal cavern quadrangular, very well defined anteriorly; the external maxillipeds do not nearly cover it, but leave the efferent branchial channels permanently widely open; the endostomial ridges that define these last are well defined posteriorly, but do not reach the anterior border of the buccal cavern.

Chelipeds in the female, markedly unequal, fingers long, pointed.

Legs long, slender, compressed, spiny.

As there is only a single female in the Indian Museum, I cannot be sure of the place of this genus in the system. It *probably* belongs to the *Cancroidea*, and should be placed near *Galene*.

Platypilumnus gracilipes, Wood-Mason.

Platypilumnus gracilipes, Wood-Mason MS., Alcock, Ann. Mag. Nat. Hist. May, 1894, p. 401 : Ill. Zool. Investigator, Crust. pl. xiv. fig. 6.

Carapace much depressed, perfectly flat above, with the surface nearly smooth centrally and very finely and closely granular laterally, and with the regions indistinctly defined. The front has the form of a horizontally projecting bilobed lamella, with the free edge sharply and very evenly spinate and the sides turned abruptly downwards. The margins of the orbit are spinulate, the upper margin the more distinctly so, and the lower margin terminates internally in a strong oblique spine, the point of which inclines towards the sharply vertical tooth formed by the already mentioned downfolding of the lateral edge of the frontal lamella.

The antero-lateral borders of the carapace which are arcuate and are shorter than the postero-lateral, are armed with three large spines, in front of, between, and behind which are several spinules.

The pterygostomian regions are large and inflated, and the branchial apertures, especially the efferent aperture, are large and patulous.

The eye-stalks are large and are of moderate length ; the corneal region is rather small.

The antennules are long and are transversely folded, their basal joint is large and inflated.

The antennæ are long, their basal joint is slender and free ; the second joint lies loosely in the internal orbital hiatus.

The inner edge of the meropodite of the external maxillipeds is convex, with a pair of little spines at the summit of the convexity ; the succeeding joint arises at the antero-internal angle.

The thoracic legs are furnished with many spines and long hairs. The chelipeds, which are robust, are unequal ; their prismatic arm has all its borders spiny ; the short inflated wrist is sharply granular and spinulate in the distal half of its dorsal surface and along the outer edge, while the inner edge bears a pair of rather large spines ; the hand is spinulate everywhere in the smaller cheliped, but only in the proximal third of its outer surface in the larger ; the fingers also of the smaller cheliped are spinulate on the outer surface, while those of the larger cheliped are smooth ; the cutting-edges of the fingers are finely and unevenly toothed.

The other thoracic legs are long, compressed, and slender, and have the meropodite spiny along both edges, the carpopodite and propodite spiny along the front edge, and the dactylopodite styliform.

Colour in the fresh state yellowish red.

Andaman Sea, 188–220 fms. A single female.

Contribution from the Chemical Laboratory, Presidency College, Calcutta.

On Double Thiosulphates of Copper and Sodium.—*By* CHANDRA BHUSHAN BHADURI, B.A., *and* JYOTI BHUSHAN BHADURI, M.A. PREM CHAND ROYCHAND SCHOLAR. *Communicated by* ALEX. PEDLER, F.R.S.

CONTENTS.

	Page.
Introduction	... 234
Historical note	... 234
Yellow double thiosulphates	... 235
Action of cuprous oxide on sodium thiosulphate ...	... 244
White double thiosulphate with sodium chloride ...	... 246
Yellowish white double thiosulphate	... 246

When working with the preparation of a few normal sulphites and particularly during an attempt to prepare normal cuprous and cupric sulphites, we had occasionally to use sodium thiosulphate instead of sodium sulphite or sulphur dioxide dissolved in water. It was soon found that a beautiful yellow salt separates, on allowing a mixture of sodium thiosulphate and copper sulphate solutions to stand for some time, in microscopic needles which however decomposes readily in a day or two unless special care is taken to get it perfectly dry. By varying the concentration and proportion, with or without addition of alcohol, the colour of the salts obtained seemed to change considerably. We undertook to analyse some of them, and the result of the analyses forms the subject matter of the present paper.

But before proceeding to describe our work a brief notice of the work done by previous chemists on the subject may not be out of place. The following list includes all the salts known at present.

Cuprous Sodium thiosulphate :—

(1) $2Cu_2S_2O_3\ 7Na_2S_2O_3\ 2H_2O$ (Jochum C. C. 1885, 642).
(2) $2Cu_2S_2O_3,\ 7Na_2S_2O_3\ 12H_2O$ (Jochum).
(3) $Cu_2S_2O_3,\ 3Na_2S_2O_3\ 2H_2O$ (Rammelsberg Pogg. 56, 321).
(4) $Cu_2S_2O_3\ 3Na_2S_2O_3\ 6H_2O$ (Jochum).
(5) $3Cu_2S_2O_3\ 2Na_2S_2O_3\ 8H_2O$ (Vortmann, M. Ch. 9, 165).
(6) $3Cu_2S_2O_3\ 2Na_2S_2O_3\ 5H_2O$ (Lenz. A. 40, 99).
(7) $5Cu_2S_2O_3\ 4Na_2S_2O_3\ 8H_2O$ (Jochum).
(8) $5Cu_2S_2O_3\ 4Na_2S_2O_3\ 6H_2O$ (Jochum).
(9) $Cu_2S_2O_3\ Na_2S_2O_3\ H_2O$ (Russel Ch. Ztg. 9, 233).
(10) $Cu_2S_2O_3\ Na_2S_2O_3\ 3H_2O$ (Vortmann M. Ch. 9, 165).
(11) $5Cu_2S_2O_3\ 3Na_2S_2O_3\ 2Na_2SO_4\ H_2O$ (Jochum).

Cuprous Sodium thiosulphate Cupric Sulphide :—

(1) $Cu_2S_2O_3\ Na_2S_2O_3\ Cu\,S\ 4\,H_2O$ (Lenz. A. 40, 99).

(2) $Cu_2S_2O_3\ Na_2S_2O_3\ 2\,Cu\,S$ (Kessel B. 11, 1585).

Cuprous Sodium thiosulphate Sodium Chloride :—

$3\,Cu_2S_2O_3\ 2\,Na_2S_2O_3\ 4\,Na\,Cl\ 8\,H_2O$ (Siewert, Zeit. ges. Naturwiss. 26, 486).

Cuprous thiosulphate sodium dithionate :—

(1) $Cu_2S_2O_3\ 4\,Na_2S_2O_4\ 4\,H_2O$ (Vortmann).

(2) $2\,Cu_2S_2O_3\ Na_2S_2O_4\ 2\,Na_2O$ (Jochum).

See Dictionary of Chemical Solubilities, Inorganic by A. M. Comey, 1896, page 474, and Dammer's Handbook II, 2 pages, 688-89.

The yellow salt to which Lenz and Siewert assigned the formula $Cu_2S_2O_3$, $Na_2S_2O_3$, Cu S, $4H_2O$, was found by Kessel to have the above composition when prepared at 10°C, and to vary in composition with variation of temperature. Kessel further noticed that the yellow salt is obtained when the copper sulphate and sodium thiosulphate are mixed in the proportion of one molecule of the former to two molecules of the latter. He further says that the reaction takes place in two stages. According to him the yellow salt is decomposed by cold strong hydrochloric acid forming a white mass which contains neither free sulphur nor copper chloride, is permanent when dry, but in contact with moisture decomposes with separation of copper sulphide and evolution of sulphur dioxide. He is, however, of opinion that the sodium chloride is present as an impurity having had nothing to do with the composition.

Vortmann on the other hand, disagreeing with Kessel describes two salts, one a greenish yellow salt $Cu_2S_2O_3\ Na_2S_2O_3\ H_2O$ and the other an intense citron yellow salt $3Cu_2S_2O_3\ 2Na_2S_2O_3\ 8H_2O$. The former according to him is obtained in microscopic needles when saturated solutions of copper sulphate and sodium thiosulphate are mixed together in the proportion of one molecule of the former to two molecules of the latter. When, however, the solutions are previously heated to about 40°C and then mixed together, the temperature of the mixture rises about 5°—7° and the salt with the composition $3\,Cu_2S_2O_3\ 2Na_2S_2O_3\ 8\,H_2O$ separates out, also in microscopic needles. The yellow salt is unstable and decomposes thus—$3\,Cu_2S_2O_3\ 2\,Na_2S_2O_3\ 8\,H_2O = 3\,Cu_2S + 2\,Na_2SO_4 + H_2SO_4 + S_2 + 2\,SO_2 + 7\,H_2O$.

The salt we are going to describe agrees in some respects with the yellow salt described by Lenz and Siewert and confirmed by Kessel, as also with that described by Vortmann. That there should be copper sulphide present in a salt with such an intense yellow colour seemed to us strange. This led us to analyse the salt once again. To start with,

it was found that the same yellow salt is invariably obtained at all temperatures between 20°C and 34°C provided the green colour of the mixture is not discharged by an excess of sodium thiosulphate. Even with fairly dilute solution, the same salt is obtained. In one or two cases, however, the sodium thiosulphate was so much in excess that the liquor left after the separation of the crystals was yellow. Sometimes the precipitate was allowed to remain in contact with the mother liquor overnight. It may be mentioned here that the salt separates out soon when prepared from concentrated solutions. If, however, dilute solutions are used it takes a much longer time for the salt to crystallise out, but it is richer in colour and more distinct in crystalline structure. In contact with the mother liquor decomposition sets in generally after a day or two, and a dark reddish brown precipitate, more soluble in water than the yellow salt, is formed which finally changes into black insoluble copper sulphide, the supernatant liquid becoming perfectly clear and transparent. In the first few preparations the salt was simply washed with water, in which it seemed to dissolve to a slight extent, until free from sulphuric acid, pressed between filter paper, powdered and dried by exposure to the air. It was found, however, that the salt so treated did not keep well for a few days, decomposition setting in, sometimes, even in course of a few hours. The colour slowly changed to black, and sulphur dioxide was evolved. It was subsequently found that a fairly stable salt could be obtained if it were washed at first with water until free from sulphuric acid and finally repeatedly with rectified spirit over filter pump, dried by exposure to the air, powdered, and carefully sifted in a fine sieve. The salt thus prepared did but lose a trifling when kept in a desiccator over calcium chloride for weeks together. The result of a determination of the loss is given here using about (7) seven grams of the salt.

22nd December, 1896. Platinum basin and salt = 31·2436 grams.

23rd ,, ,, ,, ,, = 31·2425 ,,

9th January, 1897. ,, ,, = 31·2412 ,,

26th ,, ,, ,, ,, = 31·2412 ,,

Thus about 7 grams of the salt lost only 2·5 milligrams in three weeks. This loss may easily be accounted for from a small quantity of alcohol still present in the air dried sample. In connection with the decomposition of this salt at ordinary temperature, it may conveniently be pointed out, here, that more dense the precipitate is and the richer the colour, the better it keeps. Moisture is perhaps the most important factor in bringing about the decomposition, as appears from a little of the above sample, kept sealed in an ordinary glass tube. While the substance kept quite well in a desiccator over calcium chloride for about

a month, the salt in the sealed tube began to change in the course of a few days. It is also important to mention here that the salt does not keep in contact with alcohol as was often noticed during specific gravity determination. Alcohol therefore appears to have a twofold action when used in washing the moist salt. Firstly, owing to its strong affinity for water, it removes easily the last trace of moisture from the salt, and secondly being in itself very volatile entirely disappears when exposed to the air.

A series of analysis was made with samples prepared on different occasions under varying conditions, and the result is tabulated on next page.

From the percentage composition we obtain the following atomic ratio :—

Cu : Na : S : O	=	·514	:	·369	:	·874	:	1·984
	=	1·4	:	1	:	2·4	:	5·5
	=	7	:	5	:	12	:	27·5

The composition obtained from the analysis of different samples agree so well among one another that there is no reason to assume it to be a mixture. On the contrary it may fairly be assumed to be a compound with definite composition. It has also been found that different crops of the salt obtained from the same mixture at different intervals have identical composition (see samples B. 1 and B. 2).

On adding caustic soda to a mixture of cupric sulphate and sodium thiosulphate, a blue precipitate is obtained indicating the presence of bivalent copper. If, however, the caustic soda is added after some time when the formation of the yellow salt begins, the yellowish red cuprous hydrate is obtained. On adding caustic soda to the yellow salt suspended in water, the latter is decomposed, and the same reddish yellow cuprous hydrate is obtained. This indicates that the first stage of the reaction consists in the reduction of the cupric copper to cuprous copper, and it is during the second stage that the precipitation of the yellow salt commences. The formation of the yellow salt is neither sudden nor rapid, one or two days being sometimes necessary for complete precipitation. It appears as probable that a portion of the copper in solution undergoes oxidation with the reformation of copper sulphate and reproduction of a blue solution.

The salt thus prepared was subjected to a careful qualitative analysis for all other possible sulphur compounds, as for instance sulphuric acid both free and combined a sulphide, a sulphite, and the thionates. It was found, however, that none of these compounds are present in the salt even as an impurity. But it gave all the reactions

Table of Analysis of the yellow salt obtained by the action of sodium thiosulphate on copper sulphate or acetate.
(*Temperatures* 20°–35°C).

Date of preparation.	Sample number.	Weight in grains of substance used.	Weight in grains of Cu_2S.	Weight in grains of Na_2SO_4.	Weight in grains of $BaSO_4$.	Weight in grains of Ag Br.	Weight in grains of H_2O.	Percentage of					Atomic ratio of					Remarks.
								Cu.	Na.	S.	O.	H_2O.	Cu.	Na.	S.	O.	H_2O	
Oct. 5, 1896	A.1.	0·4923	0·2016	...	1·0025	...	...	32·68	...	27·98	...	...	...	...	...	...	...	
		0·5094	0·2092	...	1·0422	...	...	32·77	...	28·12	...	...	·517	...	·876	...	...	Beautiful yellow colour.
		0·7652	0·3118	...	...	...	...	32·76	...	...	...	...	...	...	...	...	...	
Oct. 20, 1896	A.2.	0·7230	0·2958	...	1·4762	...	...	22·67	...	28·00	...	...	...	...	...	...	...	
		0·3474	...	...	...	2·5888	...	...	...	...	31·73	...	·516	·375	·875	1·983	·511	
		0·6323	...	...	...	...	0·0580	...	...	...	...	9·2						
Oct. 23, 1896		0·5556	0·2290	0·1448	...	...	...	32·71	8·68	...	...	...	...	...	...	...	...	Slightly decomposed and slight smell of SO_2.
Oct. 30, 1896	A.3.	0·5254	0·2150	0·1376	...	...	0·0493	32·65	8·48	...	...	9·38	...	...	...	..	...	Water estimated at about 240°C.
		0·2767	...	...	...	2·0688	...	...	...	...	31·84	...		...		...	...	
		0·3993	..	...	0·8128	...	...	...	...	27·99	...	...	·516	·369	·879	1·99	·523	
		0·9535	..	...	...	...	0·0904	...	...	...	...	9·46	...	...	..	..	...	
Nov. 11, 1896	A.4	0·759	0·3112	0·1985	...	...	...	32·72	8·47	...	...	...	...	...	...	...	...	Slightly discoloured.
		0·406	...	...	...	3·0197	.	...	...	...	31·67	...						
		0·2941	...	...	0·5969	...	...	...	...	27·9	...	...	·517	·369	·872	1·98		
		1·032	0·4235	...	...	...	...	32·75	..	...	...	...						

Dec. 10, 1896	A.5.	0·5330	...	...	...	3·9755	...	...	...	...	31·74	...						
		0·4362	...	...	0·8870	...	...	...	...	27·95	...	...						
		1·0034	0·4081	...	...	...	...	32·45	...	...	...	...	·512	368	·873	1·98	·564	
		1·1028	...	0·2882	...	...	0·1120	..	8·46	..	...	10·16						
Dec. 12, 1896	A.6.	0·9262	0·3785	0·2402	...	..	0·0963	32·61	8·4	...	...	10·4						
		1·2354	0·5050	0·3172	...	...	...	32·62	8·32	...	...	...	·515	·363	...	...	·577	
Dec. 22, 1896	A.7.	0·2095	...	...	...	1·5636	...	...	...	...	31·78	...	...	...	..	...	...	Kept overnight with mother liquor, washed first with water and finally with rectified spirit; most stable sample.
		0·3587	...	...	...	2·6750	...	...	...	...	31·75	...						
		1·4000	0·5677	0·3648	...	...	...	32·36	8·43	...	...	...						
		0·8469	0·3433	0·2223	...	...	...	32·26	8·49	...	...	...						
		0·4140	..	...	0·8406	...	...	...	...	27·84	...	...	·510	·368	·872	1·985		
		0·6583	...	...	1·3389	...	...	...	...	27·89	...	...						
		0·6106	...	...	1·2485	...	...	...	...	28·03	...	...						
		0·7034	...	...	1·4329	...	...	...	...	27·98	...	...						
		0·4106	...	...	0·8348	...	...	...	...	27·88	...	...						
	B.1.	0·3352	0·1409	0·0883	...	...	...	33·54	8·5	...	...	...						Obtained by mixing 100 c.c. copper acetate and 30 c.c. sodium thiosulphate filtered after 20 hours' standing; second crop.
		0·2100	...	...	0·4269	...	...	...	...	27·94	...	...	·53	·37	873			
		0·1738	...	...	...	1·3043	...	...	...	...	31·96	...						
	B. 2	0·4794	0·1988	...	0·9839	...	...	33·09	...	28·27	...	...	...	...	...	...	...	Filtered after 3 hours' settling; First crop.
		0·2141	...	...	...	1·5964	...	...	...	...	31·73	...	·523	...	·883	1·983	...	
	B. 3	1·0221	0·4158	0·2672	...	...	...	32·46	8·47	...	...	...	...	...	...	...	...	Collected with 24 hours' settling.
		0·5626	0·2315	...	1·1593	...	...	32·12	...	28·25	...	..						
		0·1998	...	...	..	1·4898	...	...	...	...	31·7	...	·51	·368	·883	1·98	·579	
		0·7218	...	...	...	...	0·0752	...	...	...	...	10·42						

of thiosulphuric acid. Hence it was concluded that the substance was a double thiosulphate of copper and sodium, and we confirmed it by quantitative estimation of the acid. We estimated the thiosulphuric acid both by the direct action of iodine on the salt acidulated with hydrochloric acid, and by decomposing the salt with caustic soda, filtering and titrating the filtrate by iodine after acidification. The results are tabulated below :—

1 c.c. IODINE SOLUTION = ·01516 GRAM I. = ·01365 GRAM $H_2S_2O_3$.

A.

Table of direct titration with iodine solution.

Wt. of Salt used (Sample VII).	Vol. of Thio-sulphate required.	Vol. of Thio. calculated for 1 gr. Salt.	Mean.	Percentage of $H_2S_2O_3$.
0·2909 gram.	10·6 c. c.	36·6 c. c.		
0·1880 ,,	6·9 c. c.	36·7 c. c.	36·63	50·
0·3467 ,,	12·7 c. c.	36·6 c. c.		

B.

Table of titration of the filtrate after decomposing the salt by NaOH and filtration.

Wt. of Salt used.	Vol. of Thio-sulphate required.	Vol. of Thio. calculated for 1 gr. Salt.	Mean.	Percentage of $H_2S_2O_3$.
Sample VII. 1·0637 gram.	38·25 c. c.	36· c. c.		
Sample VII. 1·5558 ,,	53·5 c. c.	36·3 c. c.		
			36·2	49·3
0·6190 ,,	22·0 c. c.	36·3 c. c.		
1·9320 ,,	67·9 c. c.	35·1 c. c.*		

On comparing the two tables it is found that the result of table A is slightly higher than that of B. The total sulphur 27·95 °/₀ if calculated as thiosulphuric acid would give 49·8°/₀; so that there is fair agreement between the calculated result and that obtained by the

* In this case the result is too low as the salt was slightly decomposed and discoloured.

method A. This proves that the whole of the copper is present in the cuprous state, otherwise the iodine required for direct titration would be less, owing to the liberation of iodine by the cupric salt from potassium iodide. The little discrepancy between A and B will be explained later on.

Another important point should be mentioned here in connection with the determination of water. It will be seen on going through the table that when the water is estimated by heating the substance at temperatures up to 250° C. in a current of carbon dioxide and causing the sulphur dioxide evolved to be absorbed by lead dioxide, we get 9·46 °/₀ of water. On the other hand when it is heated rather strongly and the evolved sulphur dioxide is absorbed by red hot lead chromate, the result is 10·5 °/₀. It was further noticed that the major portion of the water was liberated before the evolution of any considerable amount of sulphur dioxide began. During the decomposition of the salt a small quantity of sulphuric acid is formed which with the sodium sulphate, another product of decomposition, may form sodium hydrogen sulphate, thus accounting for the increased percentage of water at a very high temperature. We propose to take up the subject in a future communication in connection with the decomposition of the salt.

It may hence be concluded that the substance is a double thiosulphate of copper and sodium having the formula $7\,Cu_2S_2O_3\,5\,Na_2S_2O_3\,16\,H_2O$ with the following percentage composition :—

Copper	= 32·24 °/₀.	Sulphur	= 27·95 °/₀.
Sodium	= 8·37 °/₀.	Oxygen (for complete oxidation)	= 32·05 °/₀.
		Water = 10·48 °/₀.	

The salt with the composition as given above should however take 32·04 °/₀ oxygen for complete oxidation of the salt to copper sulphate and sodium sulphate. There seems to be a slight difference between the calculated percentage of oxygen and that obtained as a mean of several analysis. This difference however disappears if the result of the analysis of the last preparation, the most stable in the batch, is considered.

V. Hauer says that an acid cuprous thiosulphate of the formula $Cu_2H_4\,(S_2O_3)_3$ may be obtained by adding a concentrated solution of copper sulphate to a strong solution of sodium thiosulphate until the colour is deep yellow and gently heating the mixture, as yellow prismatic crystals. We have repeatedly tried to prepare the salt, but as often have we failed. The crystals obtained, invariably contained sodium thiosulphate, and when the heating was carried beyond 35-40°C. the mixture in some cases changed colour from yellow to a dark reddish

brown in the course of a few minutes, and finally deposited a dark-brown precipitate readily soluble in water. If, however, thoroughly saturated solutions of both copper sulphate and sodium thiosulphate, previously heated to about 50-60°C., be used, similar yellow crystaline precipitate is obtained which settles down easily. Care should however be taken in washing the salt, as a comparatively large quantity of sodium sulphate is formed in this case which has to be removed. But the freshly precipitated salt is also sensibly soluble in water. It should therefore be drained as completely as possible, washed once or twice with water and then with dilute alcohol gradually increasing the strength of alcohol and finally with alcohol alone. Different samples have been thus prepared with slight modification in the process, and the result of the analysis of the same are included in the annexed table. On examination it will however be found that although the samples appear to be identical in physical properties, they all differ more or less in composition and that therefore different formulæ should be given to them. (See Table p. 243).

As we had reason to believe that the percentage of sodium in F was a little too high the atomic ratio appears to be as Cu : Na : S : O : H_2O = 4 : 3 : 7 : 16 : 6 corresponding to the formula 4 $Cu_2S_2O_3$, 3 $Na_2S_2O_3$ 9 H_2O. With the following percentage composition :—

Cu = 31·84 % S = 28·17 % H_2O = 10·2 %
Na = 8·68 % O = 32·20 %

In E the ratio of copper to sodium is as 7 : 6.

By heating therefore with sodium thiosulphate a part of copper is separated, thus increasing the percentage of sodium and sulphur. But whether at any particular temperature a compound of perfect definite composition is formed or not, it is impossible to say positively.

We next proceeded to consider what takes place when copper acetate is used instead of copper sulphate, thinking that acetic acid being a weaker acid might give the normal copper thiosulphate or the acid salt of V. Hauer. Copper acetate is less soluble in water than copper sulphate, and accordingly we had to work with comparitively dilute solutions. Thinking that concentration and relative proportion might produce corresponding difference in composition standard solutions of copper acetate and sodium thiosulphate (1 c.c. Thio. = 10·835. $\frac{N}{10}$ Thio. = 10·835 × ·0248 gms. Thio. = ·2687 gms. and 1 c.c. copper acetate = ·0182 gms. Cu) were prepared. Kessel and Vortmann state that the yellow salt described by them can only be obtained when the two solutions are mixed in the ratio of one molecule of copper salt to two

Table of analysis of the yellow salt obtained by the action of a strong solution of sodium thiosulphate on a saturated solution of copper sulphate at temperatures from 40°C–70°C.

Date.	Sample.	Weight in grams of substance taken.	Weight in grams of Cu_2S.	Weight in grams of Na_2So_4.	Weight in grams of Ba So_4.	Weight in grams of Ag Br.	Weight in grams of H_2O.	Percentage of					Remarks.
								Cu.	Na.	S.	O.	H_2O.	
March 24, 1897,	E.	0·9581	0·3738	0·2854	...	...	0·101	31·3	9·51	...	...	10·54	Temperature of preparation 50–60°C. Water determined at 150°–160°C.
		1·2344	0·4788	0·3700	...	...	0·1274	30·95	9·71	...	...	10·33	Water determined at 190°–200°C.
		1·2108	0·4720	0·3634	...	...	0·1260	31·1	9·72	...	...	10·4	Water determined at 235°C.
							Mean.	31·12	9·65	...	...	10·42	
	F.1.	0·9429	0·3739	0·2603	...	...	...	31·5	8·96	...	...	...	Temperature of preparation 60–70°C.
		0·5408	...	...	...	4·0700	...	...	...	...	32·04	...	
		1·1134	...	...	...	...	0·1216	...	...	...	...	10·92	
		0·9234	0·3666	...	1·8922	...	...	31·68	...	28·14	...	...	
	F.2.	0·6232	0·3174	...	1·284	...	...	31·66	...	28·3	...	...	
		0·7960	...	0·2233	...	...	..	...	9·12	...	...	...	
							Mean.	31·61	9·04	28·22	32·04	10·92	

molecules of sodium thiosulphate. It was soon found that no precipitate is obtained when the mixture is made in the ratio of one molecule of the copper salt to two molecules of the sodium salt, and that the same yellow salt is obtained when they are mixed in any other proportion less than the above.

When the yellow salt is treated with a solution of sodium hydrate, an orange coloured precipitate of cuprous hydrate is obtained. If, however, the precipitation is effected in presence of a large volume of water the bright reddish yellow dense precipitate becomes voluminous, turns dirty brown and can easily be filtered. From concentrated solution the whole of the copper cannot be completely precipitated and separated, a portion invariably going into solution. The light brown precipitate after being thoroughly washed, dissolves in dilute hydrochloric acid; a small quantity possessing a black colour however remain undissolved. No sulphur free or combined can be detected in the solution. The insoluble residue can only be dissolved in aqua regia and on analysis was found to contain copper and sulphur only. The residue therefore consists of copper sulphide. It becomes now of importance to decide whether the sulphide is present as such in a soluble form in the original salt or that it is a product of a secondary reaction. We are of opinion that the latter supposition is the correct one and we shall presently give reasons for it.

As already stated the bright orange red precipitate cannot be filtered easily. If, however, the mixture be very gently heated, the precipitate settles down easily and can therefore be filtered readily. Should it however be heated nearly to boiling the precipitate darkens in colour. The residue after careful washing, on treatment with dilute hydrochloric acid leaves a considerably greater quantity of the black copper sulphide than that obtained in the cold. It is therefore clear that the sulphide of copper which is found along with cuprous hydrate is a product of a secondary reaction between sodium thiosulphate and cuprous hydrate. That this is the true explanation of it will be evident from the following consideration. Sodium thiosulphate is neutral to test paper; so also is cuprous hydrate or oxide. But when cuprous oxide is treated with a solution of sodium thiosulphate, a strongly alkaline liquid is obtained even in the cold. According to Field (Quarterly Journal of the Chemical Society xvi. 28.) cuprous hydrate dissolves in sodium thiosulphate solution at the ordinary temperature and is reprecipitated on heating. We found, however, that with the application of heat a considerably greater quantity of cuprous hydrate dissolves. To examine this reaction quantitatively weighed quantities of cuprous oxide containing 98·5 % of real cuprous oxide were dissolved in excess

of sodium thiosulphate with the application of gentle heat and the sodium hydrate produced was estimated by standard acid, using phenolphthaliene as an indicator. The result is tabulated below :—

Weight of Cu_2O used.	Vol. of standard hydrochloric acid used.	Vol. of the standard hydrochloric acid required for 1 gram of the oxide.	Mean.
0·3162 grams.	21·7 c.c.	68·6 c.c.	
0·2558 ,,	17·4 c.c.	68·4 c.c.	
0·2928 ,,	20·3 c.c.	69·3 c.c.	68·8 c.c.
0·2539 ,,	17·5 c.c.	68·92 c.c.	
1·7688 ,,	121·9 c.c.	68·94 c.c.	

1 c.c. of the standard acid used contained 0·00734 gram of true hydrochloric acid gas.

∴ 0·985 grams of real cuprous oxide liberated a quantity of caustic soda which required 68·8 c.c. of the standard acid or one gram of real cuprous oxide liberates $\frac{68·8 \times ·00734 \times 40}{36·5 \times ·985} = 0·562$ grams of caustic soda.

$$\therefore Cu_2O : NaOH :: \frac{1}{142·6} : \frac{·562}{40} = 701 : 1405$$
$$= 1 : 2$$

or one molecule of Cu_2O liberates two molecules of sodium hydrate according to the following equation :—

$$Cu_2O + H_2O + Na_2S_2O_3 = 2\,NaOH + Cu_2S_2O_3$$

The cuprous thiosulphate is kept in solution by the excess of sodium thiosulphate. This solution is very unstable under ordinary circumstances and black copper sulphide soon separates out. Here we have the explanation of the formation of the black sulphide when the yellow salt is treated with caustic soda. The reaction may therefore be represented by the following equation :—

$$7\,Cu_2S_2O_3\ 5\,Na_2S_2O_3\ 16H_2O + 14\,NaOH = 12\,Na_2S_2O_3 + 7\,Cu_2O + 23\,H_2O.$$

During the first stage of the reaction the whole of the copper is obtained as cuprous oxide, but the bright redish yellow cuprous oxide being in contact with an excess of sodium thiosulphate in course of time gradually darkens in colour and quite rapidly on heating as the result of the other equation stated above, and subsequent conversion of the cuprous thiosulphate into copper sulphide. It is for this reason again copper cannot be precipitated as oxide by means of caustic soda from a solution containing one mol. of copper sulphate to two or more molecules of sodium thiosulphate. Here we have also the explanation

of the little discrepancy noticed between the thiosulphuric acid determined by direct titration (method B) and that obtained from the total sulphur calculated as thiosulphuric acid.

The yellow salt described before dissolves easily in dilute hydrochloric acid without any apparent change. Concentrated hydrochloric acid on the other hand precipitates a white crystalline salt which settles down at once. After a while, however, sulphur dioxide is given off freely from both, and the supernatant liquid turns brown. The white salt if washed immediately with a little water and finally with alcohol is a rather stable one. It can in fact be heated in steam chamber without decomposition. In contact with the mother liquor containing strong hydrochloric acid it decomposes so soon that the washing of the salt becomes difficult and at times impracticable. Besides in presence of a large quantity of strong hydrochloric acid a proportionally large quantity of sodium chloride is precipitated and cannot therefore be completely removed by alcohol. If instead of hydrochloric acid, acetic acid be used, sodium acetate is formed and can be easily removed by washing and filtration with dilute alcohol in which menstruum it is rather freely soluble. We accordingly prepared at first a saturated solution of copper chloride in dilute acetic acid and then gradually added to it a strong solution of sodium thiosulphate, when a perfectly white salt was precipitated. Subsequent experience proved that even acetic acid is not necessary, and the white salt is obtained when a strong solution of sodium thiosulphate is gradually added to an equally strong solution of copper chloride. The precipitate is obtained in fine impalpable powder which settles down easily and can therefore be filtered and washed without any considerable difficulty. The result of the analysis of the different samples is given in the annexed table. From the mean atomic ratio Cu : Na : S : Cl : O : H_2O = 3 : 3·01 : 4·68 : 1·29 10·78 : 1·91 the salt with the formula 9 $Cu_2S_2O_3$. 5 Na S_2O_3 8 Na Cl 12 H_2O is obtained having the following percentage composition :—

Cu = 31·46	S = 24·78	O	= 28·76
Na = 11·45	Cl = 7·85	H_2O	= 5·97

If strong solutions of copper sulphate or acetate and sodium thiosulphate be mixed nearly in the proportion of one molecule of the former to two molecules of the latter and allowed to remain for some time as in other cases, no yellow salt separates out. If on the other hand a large excess of concentrated acetic acid be added to the mixture a white or faintly yellowish white precipitate is obtained which is more soluble in water than the yellow salt. Copper acetate should therefore be used in preference to copper sulphate. It can then be washed with

dilute alcohol instead of with water until free from sodium acetate and finished as before. It appears as probable that the acetic acid plays the same part in this case as alcohol does in Vortmann's salts. The white or faintly yellowish white salt turns yellow in contact with water especially if the salt be previously dried. On comparison of the result of analysis of the different preparations as given in the annexed table we find that this salt again is a double thiosulphate of copper and sodium having the formula $Cu_2S_2O_3\ Na_2S_2O_3\ 2\frac{1}{2}\ H_2O$. Russel describes (Ch. Ztg. 9233) a salt $Cu_2S_2O_3\ Na_2S_2O_3\ H_2O$ whose properties and method of preparation are altogether different from the one described here. This salt when once perfectly dry, also keeps well even in contact with the atmosphere.

Table of analysis of the white salt obtained by the action

Date.	Sample.	Weight in grams of substance used.	Weight in grams of Cu_2S.	Weight in grams of Na_2SO_4.	Weight in grams of $BaSO_4$.	Weight in grams of Ag Cl.	Weight in grams of Ag Br.	Weight in grams of H_2O.
Jan. 14, 1897...	D. 1.	0·214	...	...	0·3898	...	...	...
		0·3235	0·1281	0·1175	...	...	...	...
	D. 2.	0·3371	0·1402	...	0·6296	...	...	...
		0·2220	0·0798	..	...	0·061	...	...
	D. 3.	1·1468	0·4592	0·4036	...	...	...	...
		0·7384	...	...	1·3463	...	...	...
		0·8804	0·3516	...	...	...	...	...
		0·4602	...	...	...	...	3·1193	...
		0·5071	...	...	...	0·1527	...	...
		1·6106	...	...	...	...	...	0·0931
	D. 4.	0·9890	0·3869	0·3541	...	...	...	...
		0·4552	...	...	...	...	3·042	...
		0·8380	...	...	1·5119	...	...	...
		0·7392	...	...	...	0·2352	...	...
		1·5640	0·6160	0·5574	...	...	...	0·0909
		1·5015	...	...	...	..	...	0·0895

of hydrochloric acid (concentrated) on the yellow salt.

Percentage of						Atomic ratio of						Remarks.
Cu.	Na.	S.	Cl.	O.	H_2O.	Cu.	Na.	S.	Cl.	O.	H_2O	
...	...	25·05	...	...	...	...	...	...	...	...	...	The yellow salt was dissolved in dilute hydrochloric acid and then precipitated by strong hydrochloric acid and washed with alcohol.
31·53	11·75	...	...	...	...	3·00	3·06	4·7	...	...	...	
32·99	...	25·65	...	...	...	...	...	...	...	...	...	The result is high owing to the salt being slightly decomposed.
32·2	...	...	6·8	...	...	...	...	...	...	...	...	
32·08	11·4	...	...	...	...	...	...	...	...	...	...	
...	...	25·06	...	...	...	...	...	...	...	...	...	
32·09	...	...	...	...	...	3·0	2·93	4·63	1·24	10·77	1·9	
...	...	...	...	28·86	...	...	...	...	...	...	...	Deducting the weight of Ag Cl.
..	...	...	7·45	...	...	...	...	...	...	...	...	
...	...	...	...	...	5·78	...	...	...	...	...	...	
31·19	11·6	...	...	...	...	...	...	...	...	...	...	Perfectly white sample.
...	...	...	...	28·45	...	3·0	3·05	4·7	1·34	10·78	1·93	Deducting the weight of Ag Cl.
...	..	24·8	...	...	...	...	...	...	...	...	...	
...	...	...	7·87	...	...	..	...	...	...	...		
31·43	11·55	.	...	...	5·81	...	...	...	...	...	...	
...	...	...	...	...	5·96	...	...	...		...	...	
					Mean	3·0	3·01	4·68	1·29	10·78	1·91	

Table of analysis of salt obtained by the addition of strong acetic acid to a mixture of sodium Thiosulphate and copper acetate solutions.

Date.	Sample.	Weight in grams of substance taken.	Weight in grams of Cu_2S.	Weight in grams of Na_2SO_4.	Weight in grams of $BaSO_4$.	Weight in grams of Ag Br.	Weight in grams of H_2O.	Percentage of					Atomic ratio of					Remarks.
								Cu.	Na.	S.	O.	H_2O	Cu.	Na.	S.	O.	H_2O	
	C. 1.	0·4312	0·1573	0·1444	...	...	...	29·11	10·84	...	...	...						
		0·2162	0·0786	...	0·4634	...	...	29·01	...	29·46	...	...	1	1	2	4·5	...	
		0·1862	...	...	...	1·4224	...	...	...	..	32·5	...						
Feb. 22, 1897...	C. 2.	0·6218	0·2145	0·2104	...	...	...	27·35	10·96	...	...	...						The little discrepancy in the atomic ratio was due to the presence of a small quantity of sodium salt not thoroughly washed out.
		0·5491	0·1927	...	1·1628	...	...	28·00	...	29·49	...	...						
		0·2156	...	...	...	1·6103	...	...	...	...	31·8	...	1	1·07	2·09	4·54	1·29	
		1·067	0·3712	0·3588	...	...	0·1098	27·76	10·89	...	...	10·29						

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An Annotated List of the Butterflies of the Ké Isles.—*By* Lionel de Nicéville, F.E.S., C.M.Z.S., *&c., and* Heinrich Kühn.

(With Plate I.)

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The Ké, Key, or Kei Isles,* called by the natives the Evar Isles, have a total area of about 680 square miles, and have been in the possession of the Dutch since A.D. 1645. They lie south of the equator, also to the south of Dutch New Guinea, to the south-east of the large island of Ceram and the nearer small Banda group of isles, to the west of the Aru group of isles, and to the north of the Timor Laut or Tenimber Islands. They are placed between 5° ·0′–6° ·5′ S. Lat. and 131° ·50′–133° ·15′ E. Long. They may be divided into four parts :—I. Great Ké Isle or Noehoe Ioet, II. Little Ké or Noehoe Roa, III. the Tiandoe islets, IV. the Koer islets. The last, according to Professor K. Martin, formed once a part of the eastern extension of the continent of Asia, while the first three appertain to the Australian region. Great Ké has a tertiary formation, consisting of limestone rocks ; the surface is hilly, rising to nearly 3,000 ft. elevation. Little Ké and the other islands are all of coral formation, and are port-tertiary or quaternary. Wherever the soil and situation are favourable, the islands are planted with cocoa-nut and bread-fruit trees. The islands to the south of Little Ké are from the evidence of the rocks of an older formation of the quaternary period. All the

* Pronounced "kay," or exactly as the letter "K," says Dr. A. R. Wallace in "The Malay Archipelago."

islands shew in different places distinct old strand and beach lines, which prove that they have been periodically raised by volcanic action. According to the natives, about sixty years ago one small island was so raised above the level of the sea on the western side during the occurrence of a great earthquake combined with a tidal wave. Also during recent years slight earthquakes are felt from time to time. On Little Ké is found the largest area under cultivation, "batatas," a kind of pea, and also beans, indian-corn and cocoa-nuts being largely grown. In some places in Little Ké are yet found forests of iron-wood, "linggoo-ah" and "loriah" wood; also on the mountains of Great Ké. But the forests are being cut down year by year, and become rapidly thinner, the more so as the Ké islanders every year increase the building of "praus" (native boats), which are sold to the people of the islands close to the Ké archipelago. The natives live principally on sago, which is largely cultivated; but rice has to be imported by traders. The exports from the Ké isles consist of logs of iron-wood; "praus," "tripang" (*bêche-de-mer*), turtle-shell, black-shell, green snail-shell, "copra" (dried cocoa-nuts), and some "bengkoedoe" (*Morinda bracteata*, Roxb.), used for dyeing. The whole population consists of about 24,000 souls, residing chiefly on Great Ké, of whom about 14,000 are heathens, 9,500 Muhammadans, and about 500 Roman Catholics, the latter resulting from a mission settled there for about the last ten years. The people are of very mixed blood, and are Malaio-Polynesians. Their colour varies from light to dark brown and is of all shades. The hair is black, mostly long and slightly curly. There are of course many with short frizzly hair descended from immigrants from New Guinea. They divide themselves into four classes:— I. The "mel-mel" are the aristocracy, and are chiefly descended from immigrated traders from Ternate, Luang, Ceram, and Macassar in Celebes. From this class are mostly elected the chiefs, of whom there are usually three or four in each village. II. The "jam-ah," who are perhaps the original native aristocracy, of whom also different chiefs exist. III. The "renn-renn," who are free citizens. IV. The "tri-ri" or slaves, or better, bondsmen. Though there are so many chiefs, they have very little authority over their people, the family being the unit of government. The religion of the heathen portion of the population is a very simple one. They have one or two wooden idols erected in places they consider to be sacred, but believe much more in ghosts than in their gods; to the former they pray, and make offerings to them when commencing the cultivation of their fields, going a journey, in times of distress, &c. In general the people are very lazy, and live from hand to mouth, never thinking of the morrow. A little sago and a fish suffices for each meal, and of fish there is

an abundance in the sea for the trouble of catching. If they want a new cloth they can obtain it without trouble on credit from the numerous traders, paying for it hereafter with "copra," "tripang," &c. The Ké people consider themselves to be very courageous, but are in reality cowardly. In the old days before the Dutch took over the government of the islands, the natives were often fighting amongst themselves. These little wars, often extending over a considerable period, came to an end at last when one side or the other had killed a few of their enemies, seldom more than four or five. Under enemies, women and children were included as well as men. The tribe or village losing the fight and coming to the conclusion that peace was desirable, made terms with the opposite side, and paid a war indemnity, sometimes in land, but usually in old cannon ("lilas"), rifles, gongs ("tom-toms"), bracelets and chains of gold, plates, &c., &c.

The islands being very small have also a very poor fauna. The mammals consist of wild pigs, two species of *Cuscus*, a flying squirrel, a flying fox, some species of bats, rats and mice. On Great Ké a kangaroo and a marsupial badger are found. Birds are more common, but no paradise-birds occur.

The west monsoon blows from December till April, which is the wet-season; the east monsoon also from May to November brings much rain, alternating with fine clear days. The driest months are from July to November. The mean humidity of the atmosphere of the Ké Isles is 88·5%, and the mean temperature is 80·9° F. (27·4 Cels.), according to the observations of Mynheer H. C. W. Plauten, an officer of the Dutch navy.

Great Ké possesses many small rivers, which form here and there beautiful waterfalls in their course from the mountains to the sea. In the east monsoon they are usually dry. On Little Ké, in which there are no hills, there is only one river, which is about a mile and a half long, but which has an outflow of about two cubic meters a second, and what is most strange, has a greater flow of water in the dry- than in the wet-season, no doubt from springs at its source or in its course. Besides the rivers there are in Great Ké one and in Little Ké two small lakes, which have no outlet, and seem to be merely accumulations of rainfall in natural depressions in the ground.

From what has been said above, it will be understood that the entomological fauna of the Ké archipelago is poor, but strangely enough (at any rate as far as the butterflies are concerned) it has more distinct endemic species than some of the neighbouring islands which are larger. For instance, three out of the six known species of *Euplœa* found on the islands are endemic to them, and three of them are very unusually-

coloured animals, being more or less pure white on the upperside in both sexes, and are mimicked by the females of two peculiar species of *Hypolimnas* (*H. polymena*, Felder, and *H. hewitsoni*, Wallace). H. M. S. "Challenger" in her memorable scientific expedition round the world, called at Ké Dulan, and Dr. A. G. Butler, in Ann. and Mag. of Nat. Hist., fifth series, vol. xiii, p. 188 (1884), enumerates thirteen species of Butterflies from thence obtained on that occasion, all of which are noted below. The late Herr C. Ribbe in his paper on the Butterflies of Great Ceram (Iris, vol. ii, p. 187 (1889), mentions many species from the Ké Isles, all of which are referred to herein. Herr J. Röber of Dresden in Tijd. voor Ent., vol. xxxiv, pp. 261–334 (1891), vol. xxxv, pp. 85, 86, pls. iii–vi (1892), has written a most interesting paper on the *Lepidoptera* of the group of Malayan islands which include Ceram, Goram, Maumerie, Key, Flores, Letti, Alor, Luang, Bonerate, Timor, Timor Laut, Kisser, Wetter, and Tanah Djampea, recording 42 (not 41 as stated at page 262) species from the Ké Archipelago. All these are mentioned below, and those not seen by us have a * prefixed to their names. The present paper is based on materials obtained by Kühn during the nine years (from 1889) he has resided on the islands, and he has written the introduction and notes on the habits of the various species, while de Nicéville is responsible for the rest of the paper, and has seen it through the press. It is probable that the list is fairly complete, there are probably only a very few small species left to be recorded. We record 128 species from the Archipelago, out of which we have not seen only 17; of these latter most of the names are doubtless incorrect identifications, and appear in our list under other names.

Family NYMPHALIDÆ.

Subfamily Danainæ.

1. Hestia (*Nectaria*) d'urvillei, Boisduval.

In Great Ké this species is usually seen flying in the forest at a great height amongst the trees. It is very rare in Little Ké. *

2. Danais (*Tirumala*) hamata, Macleay.

Very seldom seen in Little and Great Ké, common on Koer Isle. De Nicéville finds it difficult to distinguish *D. septentrionis*, Butler, from this species. Macleay's species is much the older.

3. Danais (*Limnas*) petilia, Stoll.

Key, Röber, as *Danaus chrysippus*, Linnæus. The Ké Isles examples agree with those from Australia. It is very rare on all the islands.

4. Danais (*Salatura*) laratensis, Butler.

Röber as *Danaus plexippus*, Linnæus. Originally described from Larat in the Timor Laut Islands. Single specimens are seen everywhere on Great and Little Ké Islands all the year round, mostly on open spots covered with "alang-alang" grass (*Imperata arundinacea*, Cyrill.).

In de Nicéville's collection is an old male specimen of *D. intensa*, Moore, described from Java, Lombok and Borneo. As the species is unknown to Kühn, and is represented by *D. laratensis* in the Ké Isles, it is probable that the specimen did not come from the Ké Isles.

5. Danais (*Salatura*) affinis, Fabricius.

Key (*Röber*), Ké Dulan (*Butler*). Very common on all the islands.

6. Danais (*Asthipa*) citrina, Felder.

Röber as *Danaus gloriola*, Butler. Common on Great and Little Ké Islands amongst bamboo clumps. Mr. Kirby has given some notes on this species in Ann. and Mag. of Nat. Hist., sixth series, vol. iv, p. 157 (1889), but they are difficult to follow without seeing the specimens about which he wrote.

7. Tellervo zoilus, Fabricius.

Röber as *Hamadryas nais*, Guérin. Butler as *H. niveipicta*, Butler, Ann. and Mag. of Nat. Hist., fifth series, vol. xiii, p. 191, n. 6 (1884), from Ké Dulan. This "new species" hardly seems to differ from *T. zoilus*. Common everywhere in the bush in all the islands. The male secondary sexual characters in the genus *Tellervo* (=*Hamadryas*, Boisduval, nec *Hamadryas*, Hübner) do not appear to have been described. They are found in the forewing, and consist of a greater sinuosity of the inner margin than in the female; with a large clump on the upper surface of modified dull (instead of intensely black like the rest of the ground-colour) black scales from the inner margin commencing at the base of the wing but not reaching the outer margin, and extending forwards as far as the first median interspace, these modified scales being entirely absent in the female.

8. Euploea (*Vadebra*) eurypon, Hewitson.

Moore. Röber. Ké Dulan (*Butler*). Common on all the islands in October and November, but single specimens are found all the year round. Mr. F. Moore in his monograph of the subfamily (Proc. Zool. Soc. Lond., 1883, p. 284, n. 2) places this species in his genus *Chirosa*, in which

he is followed by Dr. Butler in 1884 and by Col. C. Swinhoe (Journ. Linn. Soc. Lond., Zoology, vol. xxv, p. 342 (1896), that genus coming into Mr. Moore's second section of the *Euplœina* with "One 'sexual mark' or scent-producing organ on the forewing." *E. eurypon* has no male secondary sexual characters whatever, and therefore comes into Mr. Moore's first section "No 'sexual mark' or scent-producing organ on the forewing," and seems to fall best into the subgenus *Vadebra*.

9. Euplœa (*Chanapa*) sacerdos, Butler.

Originally described from Larat in the Timor Laut Islands. Dr. Butler says that the discal series of white spots on the hindwing are not [posteriorly] notched, but in some of our specimens though not in others as many as five are occasionally notched. The species is very common on the Tiandoe and Koer islets, but only two specimens have been taken on Great Ké, and none on Little Ké.

10. Euplœa callithoë, Boisduval.

Mr. Moore in his Monograph of the *Euplœina*, p. 305, places this species under the genus *Salpinx*, but according to our specimens and Dr. O. Staudinger's figure of the male from New Guinea in Iris, vol. viii, p. 159, pl. iv, fig. 1, *male* (1895), it is a true *Euplœa*. It occurs only on Great Ké, never found on Little Ké or the adjoining islets.

11. Euplœa (*Calliplœa*) hopfferi, Felder.

Röber. This species has been figured by Col. Swinhoe in Journ. Linn. Soc. Lond., Zoology, p. 342, pl. xvi, fig. 1, *male* (1896). Found on all the islands everywhere. It is the rarest species of the genus, except the species which next precedes.

12. Euplœa (*Calliplœa*) visenda, Butler.

Originally described from Maroe Island of the Timor Laut group. Found in the Ké Islands group only on Tiandoe and Koer, where it is very common and extremely variable in the size and extent of the white markings, no two specimens being exactly alike. Some specimens are very small, perhaps the smallest in the genus, expanding only 2·0 inches in alar expanse.

13. Euplœa (*Hirdapa*) assimilata, Felder. Plate I, Fig. 1, *larva*.

Moore as *H. fraterna* Felder, from Ké Island. Röber. Butler as *H. fraterna*, from Ké Dulan. This species was originally described from the "Arru Islands," while *E. fraterna*, Felder, was described from a female only from the same islands, on the same page. Probably the

two species are really one. It is very common on nearly all the islands of the Ké group, but it seems rare on Koer. Mr. Kühn has bred it. The larva is black; each segment bears several yellow stripes, the first of which extends lower than the others and encloses the black spiracle. The head, abdomen and legs are entirely black. The body bears four pairs of long fleshy subdorsal tentacles tapering to a point, each is basally carmine-red, becoming black towards the apex, the first pair is placed between segments two and three, the second between three and four, the third between four and five, the fourth between ten and eleven. The pupa is greenish and metallic.

The *Euploeas* of the Ké Archipelago are very interesting, and form four distinct groups as regards coloration and markings:—I, *E. eurypon*, Hewitson, *E. hopfferi*, Felder, and *E. assimilata*, Felder, which are mimicked by the females of *Hypolimnas polymena*, Felder, and *H. hewitsoni*, Wallace; II, *E. sacerdos*, Butler; III, *E. callithoë*, Boisduval; IV, *E. visinda*, Butler.

Subfamily Satyrinæ.

14. Mycalesis (*Calysisme*) perseus, Fabricius.

Occurs on Great and Little Ké in fields of "alang-alang" grass, but is not common. The ocellated wet-season form appears to be the only one found on the islands. In both sexes the ocellus in the first median interspace of the forewing on the upperside has a small pure white pupil.

15. Mycalesis (*Mydosama*) sirius, Fabricius.

Little and Great Ké Isles. Much rarer than the preceding species. "*Satyrus*" *manipa*, Boisduval, and *Mycalesis daidis*, Hewitson, are synonyms.

16. Ypthima arctous, Fabricius.

Röber. Occurs commonly everywhere on all the islands, and frequents meadows.

17. Hipio constantia, Cramer.

Röber and Ribbe as *Melanitis crameri*, Butler, described from New Britain, equals "*Cyllo*" *amabilis*, Boisduval, from New Ireland. The type of the genus *Hipio* of Hübner is the present species. It is doubtfully distinct from the genus *Melanitis*, Fabricius. *H. constantia* is rather rare in all the islands, keeping chiefly to bamboo and sago scrub. Colonel Swinhoe has described a single male of this species from "Ké

Island" as *M. gylippa* in Ann. and Mag. of Nat. Hist., sixth series, vol. xii, p. 255 (1893), collected by Halliburton. Swinhoe does not refer to *H. constantia* in his description. Our females from the Ké Isles agree very well with Cramer's original figure of that sex, which was described from the Molucca Isles.

Subfamily Elymniinæ.

18. Elymnias (*Dyctis*) melane, Hewitson.

Rare on all the islands, usually seen flying about swampy places in the jungle.

Subfamily Nymphalinæ.

19. Cupha crameri, Felder.

Common everywhere on Little Ké, but more so in forests than elsewhere, flying close to the ground between low bushes. Our specimens agree fairly well with Cramer's figures of this species from Amboina in Pap. Ex., vol. ii, pl. cxlviii, figs. D, D (F, F in text), *male* (1777), as "*Papilio*" *lampetia*. Dr. Aurivillius says that these figures equal the "*Messaras*" *crameri* of Felder, nec "*Papilio*" *lampetia* of Linnæus, as indeed was pointed out by Dr. Felder when renaming Cramer's figures.

20. Atella egista, Cramer.

From Little and Great Ké. Flies high and is seldom caught; keeps to the tops of bushes.

21. Cethosia cydalima, Felder. Plate I, Figs. 2, *larva*; 2*a*, *head of larva*; 2*b*, 2*c*, *pupa*.

Röber. Ké Dulan, Butler, as *C. insulata*, Butler. Ribbe as *C. cydippe*, Linnæus, var. *damasippe*, Felder. Dr. Butler in Cist. Ent., vol. i, p. 165, n. 37 (1873), described *C. insulata* from Ké Island. He does not give the sex of the types. It is probably the same as *C. cydalima*, originally described from the Arru Islands. The species on Little and Great Ké is not common, but is less rare at the beginning and end of the wet than at other seasons. Mr. Kühn has bred it, the larva being of the usual form, with six compound black spines on each segment, the dorsal pair twice as long as the two lateral pairs; the ground-colour of the larva deep black, each segment posteriorly with a pair of sulphur-yellow bands reaching below the spiracles. The pupa is whitish, clouded with pale brown, with four pairs of golden spots on the dorsum.

22. Cethosia lamarckii, Godart.

Occurs only on Tiandoe and Koer Islets, not found on Great and Little Ké Isles.

23. Cynthia cycnia, de Nicéville.

C. cycnia, de Nicéville, Journ. A. S. B., vol. lxvi, pt. 2, p. 547, n. 4, pl. iii, figs. 19, *male*; 20, *female* (1897).

Little and Great Ké. Single specimens are occasionally caught on flowers.

24. Precis ida, Cramer.

Röber. Very common on all the islands all the year round.

25. Precis zelima, Fabricius.

Kühn has sent one male specimen of this species to de Nicéville. In the collection of the latter are several examples of both sexes from Mackay in North Australia, with which the one from the Ké Isles agrees exactly. The species may be known from *P. ida*, Cramer, by having on the underside of the hindwing a decreasing series of two, three, or four creamy-white spots commencing on the middle of the costa posterior to the costal nervure. It is a little doubtful in de Nicéville's opinion if this character is really of specific value, as in the common *P. iphita*, Cramer, of India, the same variation is of frequent occurrence.

26. Junonia expansa, Butler.

Precis expansa, Butler, Proc. Zool. Soc. Lond., 1883, p. 367, n. 5.

Röber as *J. erigone*, Cramer. Described from females from Larat in the Timor Laut Islands. In the Ké Isles it is rather variable, the tone of the ground-colour of both wings on both surfaces being much darker in some specimens than in others. The male is much darker coloured than the female, especially so on the underside. In Little and Great Ké it is very common all the year round.

27. *Junonia orithyia, Linnæus.

Röber as *J. orithya* [sic!]. This is we think a very doubtful record; at any rate it will not be the typical form of the species which is found in the Ké Isles.

28. Junonia villida, Fabricius.

Very rare on Little and Great Ké.

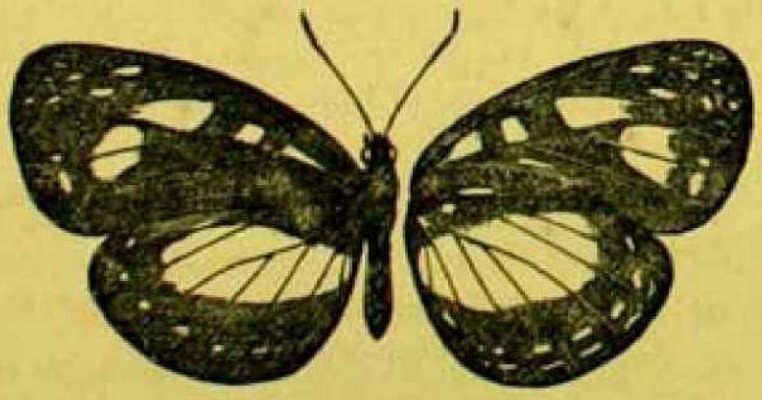
29. *Junonia timorensis, Wallace.

Ké Dulan (*Butler*). We have not seen this species from the Ké Isles.

30. Neptis (*Rahinda*) consimilis, Boisduval. Plate I, Figs. 3, *young larva on food-plant*; 3*a*, *full-grown larva*.

Not very rare on Little and Great Ké, single specimens being here and there met with. Mr. Kühn has bred this butterfly. The ovum is laid singly on the underside of the leaves of a papilionaceous shrub, it is shaped like a raspberry, is pale yellow, and slightly hairy, and furnished with raised knobs or tubercles in seven rows, the largest row having 14 tubercles. Larva dark olive-brown, shagreened; head bifurcated in the dorsal line; the second, third and fifth segments furnished with a pair of processes, the pair on the third segment the longest; there is a pale dorsal line from the third to the thirteenth segment, and a similar spiracular line. For protection against its enemies the larva has developed the following curious habits:—It bites half through the middle of one of the bipennate leaves of its food-plant, which is probably a species of *Acacia*, and also bites through entirely the small leaves at the end of the stem beyond the half-bitten-through part, but fixes each of these bitten-off leaves to the stem by a thread. The larva rests on the underside at the extreme end of the stem, which has bent over at a right-angle from the unbitten portion, and feeds on the faded, dried-up, brown leaves, which very quickly become of the same shade of colour as the larva. When touched, the larva shakes the leaves. The larva is very sluggish, and moves very slowly, step by step.

31. Neptis lactaria, Butler.



Athyma lactaria, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xvii, 98, n. 1 (1866); *Neptis lactaria*, de Nicéville, Journ. A. S. B., vol. lxvi, pt. 2, p. 535, n. 2, *woodcut of female* (1897).

Rare on Little and Great Ké Isles.

32. Neptis (*Phædyma*) nectens, de Nicéville.

N. (*Phædyma*) *nectens*, de Nicéville, Journ. A. S. B., vol. lxvi, pt. 2, p. 548, n. 6, pl. i, fig. 3, *female* (1897).

Very rare on Little and Great Ké, not known from the other islands.

33. *Neptis venilia, Linnæus.

Ribbe records this species from the Key Isles as "*Athyma*" *venilia*, but we have never seen it from thence.

34. Hypolimnas bolina, Linnæus.

Röber. Common in December and January on all the islands, but single specimens are met with all the year round. The form of the female occurring in the islands is that called *Papilio iphigenia* by Cramer, Pap. Ex., pl. lxvii, figs. D, E (1775), from Batavia in Java. The male is normal.

35. Hypolimnas polymena, Felder.

Röber as *H. alimena*, Linnæus, var. *heteromorpha*, Röber. The male of this species is typical *H. alimena*, Linnæus, but the female, which gives its name to the species, has been named *H. polymena* by Felder, from the Arru Isles, and *H. heteromorpha* by Röber. It is a mimic of *Euplœa assimilata*, Felder, and the other two similarly coloured *Euplœas* found in the Ké Archipelago. It is common in the wet season, and has been figured by Swinhoe in Journ. Linn. Soc. Lond., Zoology, vol. xxv, p. 342, pl. xvi, fig. 2, *female* (1896).

36. Hypolimnas hewitsoni, Wallace.

Apparently rare in the Ké Archipelago, Kühn having only obtained three or four worn male specimens on Tiandoe. Both sexes of this fine species were described and figured from the Ké Islands by Hewitson in Proc. Zool. Soc. Lond., 1858, p. 464, pl. liv, figs. 2, *male*; 1, *female*, as *Diadema pandarus*, Linnæus, and Wallace in Trans. Ent. Soc. Lond., 1869, p. 282, n. 8, named it *Diadema hewitsoni* from the same place. The female, which we have not seen, is heavily marked with white on both wings on the upperside, and doubtless mimics the three similarly marked species of *Euplœas* found on the Ké Isles.

37. Parthenos brunnea, Staudinger.

Röber. This is quite distinct from *P. sylvia*, Cramer, from Java, and *P. salentia*, Hopffer, from Celebes. Single specimens on Little Ké and Great Ké are found all the year round.

38. Euthalia (*Lexias*) æropus, Linnæus.

Ribbe as *Symphædra aeropa*. Occurs only on Great Ké on the tops of hills, and is very rare. Not found on Little Ké Island.

39. Salamis sabina, Cramer.

Sometimes rare, at other times common, on all the islands.

40. Doleschallia australis, Felder.

Ké Dulan (*Butler*). At times scarce, sometimes common, on Little and Great Ké Islands.

41. Doleschallia polibete, Cramer.

Commoner than the preceding species on Little Ké and Great Ké Isles. It is very interesting that two such distinct species should be found together on one small group of islands. *D. polibete* appears to be found in the Himalayas, Assam, Burma, South India, Ceylon, the Andaman and Nicobar Islands, and again in Lombok, Amboina, and the Ké Islands. It was originally described by Cramer from Amboina in Pap. Ex., vol. iii, pl. ccxxxiv, figs. D, E, *female* (1779); Cramer's figure under the same name on pl. ccxxxv, figs. C, D, *male*, also from Amboina, has been named *D. crameri* by Distant in Ent. Month. Mag., vol. xxii, p. 41 (1885), and is a quite distinct species. The Lombok, Amboina and Ké Islands form differs from the form from the other localities named above as *D. polibete* in having the four subapical white dots on the forewing much more strongly developed, the more western form having them more feebly developed and sometimes entirely absent, but this solitary character is one on which it is hardly sufficient to base a distinct species. *D. bisaltide*, Cramer, and *D. pratipa*, Felder, seem to be one species, which is found in the Malay Peninsula, Sumatra, Nias, Java, Bawean, Borneo, Bali, Lombok and the Philippines.

42. Charaxes keianus, Rothschild. Plate I, Figs. 4, 4*a*, 4*b*, *pupa*.

C. pyrrhus keianus, Rothschild, Nov. Zool., vol. iv, p. 508, n. 2 (1898).

A rare butterfly on Little and Great Ké Islands. Mr. Kühn has bred the larva, which feeds on *Albizzia* sp., and also *Mesua ferrea* (Ironwood). The pupa is of the usual shape, very broad, rounded, smooth, with some small knobs only round the cremaster. In colour it is pale green, with snow white stripes and dashes. This species is described by de Nicéville in Journ. Bomb. Nat. Hist. Soc., vol. xii, p. , n. 8, pl. Z, figs. 13, *male*; 14, *female* (1898). When describing it de Nicéville did not know that it would subsequently be named by the Hon. Walter Rothschild.

Family LEMONIIDÆ.

Subfamily LIBYTHÆINÆ.

43. LIBYTHEA ANTIPODA, Boisduval.

Herr Kühn has taken a single specimen of this species, and saw one other. The identification is his, de Nicéville has none from the Ké Archipelago.

Family LYCÆNIDÆ.

44. GERYDUS ACRAGAS, Doherty.

Not very rare in Little Ké Island. Most frequently caught on the young leaves of a species of *Sambucus* at rest amongst black ants, the butterfly as well as the ants probably feeding on the sap of the leaf-buds. The male has a small oval whitish patch surrounding the swollen base of the third median nervule on the upperside of the forewing; no other markings whatever on the upperside. The female has the markings on the upperside exactly as described for the species by Doherty. Both sexes on the underside of the forewing have the markings exactly as described by Mr. H. H. Druce in Proc. Zool. Soc. Lond., 1895, p. 561, pl. xxxi, figs. 9, *male*; 10, *female*, for *G. vincula* from Borneo. Doherty unfortunately does not say if the submarginal band of confluent markings extends from the apex to the outer angle or not. *G. vincula* differs from *G. acragas* in the female being uniformly dull brown without markings on the upperside of the forewing. The "*Miletus*" *chinensis*, var. *ceramensis*, Ribbe, from South and East Celebes, Amboina, Saigun, Buru and Borneo (Iris, vol. ii, p. 247, n. 95, pl. v (nec i), fig. 2, *female* (1889), appears to be quite the same as *Geryden acragas*, and has two years' priority.

45. PITHECOPS BASSARIS, de Nicéville.

P. bassaris, de Nicéville, Journ. Bomb. Nat. Hist. Soc., vol. vii, p. 327, n. 4, pl. H, figs. 4, *male*; 5, *female* (1892).

Röber as *Eupsychellus* (n. g.) *dionisius*, Boisduval. Ribbe as *Plebejus dionysius*, Boisduval. It is found commonly on Little and Great Ké Islands during the wet season on roads and paths through swampy bush country. The genus *Eupsychellus* is a synonym of *Pithecops*.

46. *NEOPITHECOPS ZALMORA, Röber.

Plebeius lucifer, Röber, Iris, vol. i, p. 61, pl. iv, fig. 5 (1886).

Not seen from the Ké Isles by us. It was described from the Aru and Key Islands as *P. lucifer* by Röber. Herr Röber kindly sent

de Nicéville a specimen of this species named by himself from the Aru Isles, which enables de Nicéville to say confidently that *Plebeius lucifer* is a synonym of *Neopithecops zalmora*. In vol. ii of Dr. O. Staudinger's and Dr. E. Schatz's Exotische Schmetterlinge, p. 273, n. 32, pl. xlviii (1892), reference is made to Herr Röber's genus *Papua*, the type of which is based on *Plebeius lucifer*. Consequently *Papua* falls to *Neopithecops*.

47. Megisba malaya, Horsfield.

Mr. de Nicéville has seen four specimens only from the Ké Isles of this widely distributed species, none of which have tails. It keeps chiefly to the tops of fruit trees, and is apparently rare, but is probably less often seen than it would be if larger, brighter coloured, or haunting lower stations. It occurs only as far as is known on Little Ké Island of the Ké Archipelago.

48. Cyaniris kuehni, Röber.

Plebeius kühni, Röber, Iris, vol. i, p. 60, pl. iv, fig. 29, *male* (1886).

Described by Röber from East Celebes and the Key Islands. It is very close to the widely-spread *C. puspa*, Horsfield. Especially found on Little but also on Great Ké Island. It is partial to the flowers of *Leguminosæ*.

49. *Cyaniris cagaya, Felder.

Röber as *Plebeius cagaya*. We doubt the occurrence of two distinct species of *Cyaniris* in the Ké Islands. *C. cagaya* was described from the Philippine Isles.

50. Zizera otis, Fabricius.

Common on Little and Great Ké Isles on roads and paths flying amongst the grass and low-growing herbs.

51. Zizera gaika, Trimen.

Very rare, found only on Little Ké, though probably often overlooked. It is the smallest butterfly found in the islands, some of our specimens expanding only ·6 of an inch.

52. "Plebeius" tualensis, Röber.

P. tualensis, Röber, Iris, vol. i, p. 61, pl. v, fig. 26 (1886).

Originally described from the Key Islands, where it is very rare on Little and Great Ké, and usually caught on flowers of the *Leguminosæ*. The male on the upperside is coloured like a typical species

of the genus *Nacaduba*, being dark dull purple, with a narrow external black border. The female on the upperside is dull plumbeous, not dull purple like the male. The markings on the underside are more similar to those of the genus *Zizera* than to those of any other genus known to us. It has no tails. The neuration differs from both the above-named genera in that the first subcostal nervule is entirely separated from the costal nervure in the forewing. It has a near relation in "*Lycæna*" *mærens*, Rosenstock, from tropical Northern Australia, but the male of that species has the wings narrower, the apex of the forewing more acute, and the outer margin straighter, the ground-colour of both wings on the underside darker, and all the markings consequently less prominent. *Lycæna mærens* has been placed by Messrs. Anderson and Spry in "Victorian Butterflies," p. 92, *woodcut of male* (1894), in the genus *Holochila*.

53. Pseudodipsas ilias, Felder.

Decidedly rare on Little and Great Ké Isles. Our specimens agree very well with "*Holochila*" *intensa*, Butler, from the Aru Isles and New Guinea. Unfortunately the description is not comparative with *P. ilias*. It has a very quick flight, and sits in the hot sun on the tops of certain bushes with rounded leaves. Röber records it from Key as *Philiris* (n. g.) *ilias*, Felder. But "*Thecla*" *ilias* appears to be congeneric with *Pseudodipsas eone*, Felder (1860), the type of the genus *Pseudodipsas*, so *Philiris* would appear to fall to *Pseudodipsas*. The genus *Holochila*, Felder (1862), cannot stand, being preoccupied in Mammals, and *Erina* (1832–33), Swainson, cannot be used, as it is based on the typical species, "*Papilio*" *erinus*, Fabricius, from Australia. *Polycyma*, Scott (1890), appears on plate xii of Scott's "Australian Lepidoptera" for *Polycyma carythæ*, itself a synonym of *Papilio erinus*, and is a year older than Röber's name *Philiris*. All these names appear to be synonymous with *Pseudodipsas*. The genus *Candalides*, Hübner (1816), type *Rusticus Adolescens xanthospilos*, Hübner, is perhaps the oldest name for this group of butterflies.

54. Thysonitis triopus, de Nicéville, n. sp.

Habitat: Great and Little Ké Islands.

Expanse: ♂, 1·8 to 2·0; ♀, 2·0 inches.

Description: Female. Nearest to *T. apollonius*, Felder, var. *supous*, H. H. Druce and Bethune-Baker, Proc. Zool. Soc. Lond., 1893, p. 542, pl. xlv, fig. 7, *female*, from Wammo Dobbo in the Aru Isles; differs in being ·4 of an inch greater in alar expanse; and the upperside of

both wings having the white discal band of twice the width. UNDERSIDE, *both wings* have the white discal band of the same width as on the upperside, in var. *supous* the band is wider than on the upperside, though not as wide as in *T. triopus*. Differs from *T. hermes*, Grose Smith, Rhop. Ex., pl. Oriental *Lycænidæ* iv, figs. 7, 8, *female* (1895), from Korrido and Biak Islands, on the UPPERSIDE of *both wings* in having the discal band pure white instead of heavily irrorated with black scales. UNDERSIDE, *both wings* have all the metallic green or blue (according to the light) markings much more extensive. Differs from *T. apollonius* from several localities in New Guinea in my collection on the UPPERSIDE of *both wings* in having the discal white band much broader and pure white, instead of narrow, dusky and obscure. On the UNDERSIDE of *both wings* the discal band is wider, twice as wide on the *hindwing*. MALE. Indistinguishable from the same sex of *T. apollonius*. Both sexes tailless.

The description above shews that this species is based on the female sex only. It has been described from three males and one female. It occurs rarely on Great Ké, and flies about the trees along the banks of mountain streams; it is found also in high forest in Little Ké Isle.

55. THYSONITIS KORION, H. H. Druce and Bethune-Baker.

T. korion, H. H. Druce and Bethune Baker, Proc. Zool. Soc. Lond., 1893, p. 547, pl. xlvi, fig. 3, *male*.

Originally described from the Kei Islands, where it occurs on Little and Great Ké Isles, on the tops of bushes along the roads and paths. The FEMALE (hitherto undescribed) has on the UPPERSIDE of the *forewing* the costa widely black, extending into the middle of the discoidal cell, the outer margin broadly and increasingly black, the rest of the wing shining bluish-purple, with a white dash on the disc commencing on the disco-cellular nervules. *Hindwing* with the costa widely fuscous mixed with whitish, the outer margin more broadly black than on the forewing, the middle of the wing shining blue. UNDERSIDE, *both wings* exactly as in the male. This species has no tails.

56. THYSONITIS ILLUSTRIS, Röber.

Plebeius illustris, Röber, Iris, vol. i, p. 53, pl. iv, fig. 6, *female* (1885).

We have this species from Great Ké only, where it is very rare. Messrs. H. H. Druce and G. T. Bethune-Baker in writing their monograph of the genus in Proc. Zool. Soc. Lond., 1893, p. 552, note that "The male only is described," but Herr Röber says his type specimen

was a female. We have both sexes. The hindwing bears a thin black tail tipped with white.

57. *Thysonitis cælius, Felder.

Röber as *Plebeius cælius*, Felder, from Key. It is probable that Herr Röber so identified the species which has been described subsequent to his 1891 paper as *T. korion*, H. H. Druce and Bethune-Baker. The latter gentlemen spell the word *cœlius*. As figured, this species has no tails.

58. Lycænesthes emolus, Godart.

Not rare on Little Ké Island. Caught on flowers and bushes in open places. It is highly probable we think that "*Plebeius*" *seltuttus*, Röber, Iris, vol. i, p. 67, pl. v, fig. 24, *male*; pl. iv, fig. 24, *female* (1886), from the Aru Isles, and East and North-West New Guinea, is the same species as *L. emolus*.

59. Lycænesthes turneri, Miskin.

L. turneri, de Nicéville, Journ. Bomb. Nat. Hist. Soc., vol. xii, p. , n. 13, pl. Z, figs. 24, *male*; 25, *female* (1898).

Much rarer than the preceding species on Little Ké and found with it. It was originally described from Australia, and Australian specimens in de Nicéville's collection agree exactly with both sexes from the Ké Isles.

60. Everes argiades, Pallas.

Somewhat rare on Little and Great Ké, flies near the ground, amongst low plants.

61. Nacaduba hermus, Felder.

Röber and Ribbe as *Plebeius unicolor*, Röber, from Key, described from Ceram, Key and East Celebes. Herr Röber has sent a male to de Nicéville from Ceram, which proves that *P. unicolor* is a synonym of *N. hermus*. We have both sexes from the Ké Isles.

62. Nacaduba meiranganus, Röber.

Very rare on Little and Great Ké Islands. Originally described from the Aru Isles. Has a very quick flight, and settles on the leaves of bushes by the roadside. In coloration and markings the female of this species very closely resembles that sex of *Lycænesthes turneri*, Miskin.

63. NACADUBA ANCYRA, Felder.

Found not commonly on all the islands on the flowers of *Leguminosæ*.

64. NACADUBA PERUSIA, Felder.

Little Ké Isle, rare, mostly found sitting on the tops of dry bushes. *N. laura*, Doherty, is very close to *N. perusia*, if indeed actually separable, except perhaps in the female.

65. NACADUBA ATRATA, Horsfield.

Rather rare on Little Ké Isle.

66. NACADUBA NORA, Felder.

Little Ké Isle. The tailed form appears alone to occur, and is perhaps better known as *N. ardates*, Moore.

67. JAMIDES PURPURATA, Grose Smith.

J. purpurata, Grose Smith, Nov. Zool., vol. i, p. 574, n. 219 (1894).

Ribbe as *Plebejus astraptes*, Felder. *J. purpurata* was originally described from New Guinea. If we have correctly identified the Ké Island species the male is distinguished by its bluish-purple colour on the upperside, which is not nearly as brilliantly metallic as it is in *J. bochus*, Cramer, and its allies, and the outer black border to both wings is about 1·5 mm. in width. It is near to *J. cephion*, H. H. Druce, Proc. Zool. Soc. Lond., 1891, p. 367, pl. xxxi, fig. 19, *male*, from the Solomon Isles, but has the black border to both wings on the upperside about twice as broad, and it is not "brilliant morpho blue." It differs from *J. astraptes*, Felder, as figured by Semper from the Philippines, in having the black border to the forewing on the upperside in the male less broad, and on the hindwing about twice as broad. In the Ké Isles it is rare, and is found on Little Ké Island only.

68. LAMPIDES ARATUS, Cramer.

Butler, Ribbe and Röber as *Lampides ætherialis*, Butler, from Ké Dulan (*Butler*), and Key (*Ribbe* and *Röber*). The commonest species of the genus on all the islands of the Ké Archipelago.

69. LAMPIDES CELENO, Cramer.

Butler as *L. ælianus*, Fabricius, from Ké Dulan, and Röber as *Plebeius ælianus*, from Key. Also very common on all the islands.

70. Lampides amphissa, Felder.

Rare on Little Ké Island. The *L. areas*, H. H. Druce, from the Solomon Isles, Proc. Zool. Soc. Lond., 1891, p. 368, pl. xxxii, figs. 7, *male*; 8, *female*, is very near to *L. amphissa*, which was originally described from Batjan.

71. Lampides hylas, Cramer.

Röber as *Plebeius euchylas*, Hübner. Not rare on damp spots on pathways in Little Ké, common on Great Ké.

72. Catochrysops strabo, Fabricius.

Ribbe as *Plebejus kandarpa*, Horsfield. Occurs commonly on leguminous plants on all the islands.

73. Catochrysops lithargyria, Moore.

This species is found on Koer Island. The male is distinctly blue on the upperside, while *C. strabo*, Fabricius, is as distinctly purple.

74. Catochrysops cnejus, Fabricius.

Extremely common on *Leguminosæ*. It occurs on Koer and the other islands of the Archipelago.

75. Polyommatus bœticus, Linnæus.

Ribbe as *Plebejus bœticus* from Key. Occurs rarely on Great Ké Island.

76. Amblypodia sp.

Herr Kühn has sent to de Nicéville a somewhat rough coloured drawing of a species of *Amblypodia* which the latter is unable to identify. Herr Kühn caught a single specimen on Great Ké. The drawing appears to represent a female; the upperside is dark umber-brown, the forewing has a pale blue basal patch occupying about a third of the wing, and extending from the subcostal nervure to the inner margin. The hindwing has a similar basal patch, wedge-shaped, narrow at the base of the wing, wide outwardly, and occupying the whole of the discoidal cell. The underside of both wings is as usual in the genus of various shades of brown, more or less mottled with white. No species of true *Amblypodia* has, we believe, hitherto been recorded as far east as the Papuan region.

77. Arrhopala helius, Cramer.

Rare on Little Ké, not seen at Great Ké. Found on young Djamboe trees (*Jambosa aquæa*, Rumph.).

78. Arrhopala amytis, Hewitson.

Röber as *Amblypodia micale*, Blanchard, from Key. Common on Little Ké Island on Djamboe and other fruit trees. Mr. Bethune-Baker has kindly identified this species for us.

79. Curetis sp.

Very rare, Kühn has only one male specimen from Little Ké Island in his collection, of which he has sent a coloured drawing to de Nicéville. Without knowing its female, it is difficult to identify the species. It agrees fairly well with *C. tagalica*, Felder, from the Philippines.

80. Hypolycæna danisoides, de Nicéville.

H. danisoides, de Nicéville, Journ. A. S. B., vol. lxvi, pt. 2, p. 558, n. 13, pl. iii, fig. 21, *female* (1897).

Very rare. Kühn has bred it, the larva feeding on orchids. The male differs only from the female in being smaller (1·1 inches in alar expanse), it has both wings narrower (less rounded), and the apex of the forewing more acute. The markings are precisely similar. It has no secondary sexual characters whatever.

81. Deudorix epijarbas, Moore.

Found on Little Ké, and is very rare on flowering trees.

82. Rapala phranga, Hewitson.

Originally described from Batchian. According to the figure the Ké Isle form has rather more green-blue coloration on the upperside of the forewing in the male than the typical form. The female (hitherto undescribed) has the *forewing* on the upperside wholely greenish-blue except the costa, apex and outer margin. Otherwise as in the male, save, of course, that the male secondary sexual characters are wanting. "*Deudorix*" *simsoni*, Miskin, from Northern Australia, differs but slightly from the Ké Isles form. It is found commonly on the leaves of trees and bushes along the roads, especially on Little Ké Island.

83. Bindahara isabella, Felder.

Very rare, only a few specimens from Little Ké Island obtained.

84. Liphyra brassolis, Westwood.

A single male only obtained on Little Ké Island. Kühn caught it one evening at the lamp. The Hon. Walter Rothschild in Nov. Zool., vol. v, p. 97, n. 5 (1898), has described *Liphyra brassolis major* from females from Northern Australia. This may be the species named above.

Family PAPILIONIDÆ.

Subfamily Pierinæ.

85. Leptosia xiphia, Fabricius.

Common on all the islands, softly flying along close to the ground.

86. Elodina egnatia, Godart.

The specimens from the Ké Isles agree with Hewitson's figure of "*Pieris*" *padusa* from Australia, except that the forewing is not nearly so produced at the apex, the costa consequently being shorter; the hindwing also is broader. Mr. W. H. Miskin in his Cat. Rhop. Aust., p. 8 (1891) gives *P. padusa* as a synonym of *E. egnatia*, but it is probably quite distinct. *E. egnatia* is not rare on Little Ké Island, but is a butterfly very difficult to catch. The two sexes are almost exactly alike. We have absolutely similar specimens from Wetter and Northern Australia.

87. Catopsilia crocale, Cramer. Plate I, Figs. 5, *larva*; 5*a*, 5*b*, *pupa*.

Wallace as *C. alcmeone*, Cramer. Röber as *C. pomona*, Fabricius, *C. crocale*, Cramer, and ab. *flava*, Butler. "*Papilio*" *crocale*, Cramer, and "*Papilio*" *pomona*, Fabricius, were described in the same year (1775). We prefer to use the former name as it was accompanied by a figure. There are several forms of this protean species occurring on all the islands of the Ké Archipelago. Taking those without ocelli on the underside, we have males with the yellow coloration evenly suffused over both wings on the upperside, with females to match them, the males agreeing with Butler's figure of "*Callidryas*" *flava*, from the Moluccas, &c., but the females are not nearly so heavily marked with black on the upperside as in Butler's figure of that sex of *C. flava*. Taking those with ocelli on the underside, we have males with the yellow coloration evenly suffused over both wings on the upperside like *C. flava*, and others with the yellow coloration confined to a well-marked basal area on both wings, beyond which the wing is white; the females are like the other form. It is very common, and Kühn has frequently bred it on "Djohur" trees, the larva being

shagreened, above grayish-green, with a shining steel-blue line above the spiracles, then a spiracular white stripe, which becomes yellow from the second to the fourth segments, the infra-spiracular region is light green, beneath it is bluish-green. Each segment bears six folds or creases, and all the segments are minutely dotted with black. The pupa is pale green, with the head produced into a long pointed process, the thorax humped in the dorsal line, there is a lateral yellow line running from the extreme apex to the posterior end of the pupa.

88. Terias hecabe, Linnæus.

Röber as *Eurema hecabe* from Key. Butler as *T. photophila*, Butler, from Ké Dulan. He describes the male only, and says it has no sub-apical brown patch on the underside of the forewing, this patch, however, is present in females from Ké. In his latest revision of the genus (Ann. and Mag. of Nat. Hist., seventh series, vol. i, p. 75, n. 51 (1898), he places *T. photophila* as a synonym of *T. sulphurata*, Butler, which "Ranges from Northern Australia northwards to Timor Laut, Aru, and New Guinea, and thence eastwards to New Ireland, appearing just to touch the Solomons; more to the south it ranges eastwards to the Loyalty, New Hebrides, and Fiji Islands." Common on all the islands.

89. Terias sp.

Only one specimen from Little Ké. It is allied, from Kühn's description, to *T. læta*, Boisduval.

90. Terias candida, Cramer.

Not as common as *T. hecabe*, Linnæus, on Little and Great Ké Islands. Dr. Butler gives Amboyna and Ceram only for this species. Our male specimens agree with Cramer's figure, and have the abdominal margin of the hindwing on the upperside broadly black.

91. *Appias lyncida, Cramer.

Röber as *Tachyris lyncida* from Key. We have seen this species only from Java, Bali and Lombok.

92. Appias celestina, Boisduval.

Rare on Little Ké, somewhat more plentifully found on Great Ké Island. Our females are Form I, bluish-white, not rich yellow on the upperside.

93. Appias clavis, Wallace.

Röber as *Tachyris ada*, Cramer, from Key. Originally described from Ké Island. It is rather rare on Little Ké, not so rare on Great Ké Island.

94. Appias albina, Boisduval.

Decidedly rare on Little and Great Ké Isles. The Form I of the female, ground-colour white on both surfaces, appears to be the only one found.

95. Huphina rachel, Boisduval.

Röber as *Pieris pitys*, Godart, from Key. "*Pieris*" *rachel* was originally described from Java, but we have seen no specimens from thence. Our examples agree very well with the description, except that the small yellow spot at the external angle (apex) of the hindwing on the underside is often absent, and when present almost obsolete. "*Pieris*" *pitys*, Godart, is also a closely allied species, described from Java, also never seen by us, which is said to have four or five white spots arranged transversely in addition to the apical white spot on the upperside of the forewing, whilst our species has one or at most two subapical white spots only. *P. pitys* is figured by Lucas from Java, but he does not shew the four or five white spots mentioned above, and in other respects his figure does not agree with our specimens from the Ké Isles. Perhaps "*Pieris*" *perictione*, Felder, described from the Arru Islands, is nearest to our species, but it has never been figured, and a description alone is inadequate to enable one to discriminate between very closely allied species, though the description agrees very well with our specimens. *H. rachel* is very common throughout the year on all the islands.

Subfamily Papilioninæ.

96. Troides priamus poseidon, Doubleday.

Röber as *Ornithoptera priamus*, Linnæus. The Hon. Walter Rothschild in "A Revision of the *Papilios* of the Eastern Hemisphere, exclusive of Africa," Nov. Zool., vol. ii, p. 191 (1895) records this species as *T. priamus poseidon*, Doubleday, (*k* [2]) : ♀—ab. *hecuba*, Röber (Tijd. voor Ent., vol. xxiv, p. 263 (♀, *nec* ♂) (1891), from the Key Islands. On Little Ké, Great Ké and Koer (Kühn got none from Tiandoe) this butterfly is always to be seen on the wing, but is never abundant. The larva feeds on a species of *Aristolochia*.

97. Papilio polydorus thessalia, Swinhoe. Plate I, Figs. 6, *larva*; 6*a*, 6*b*, *pupa*.

Röber as *P. polydorus*, Linnæus. The local race *thessalia* was originally described from Ké Island (*Halliburton*). It is usually common on Little and Great Ké Isles, but is sometimes rare, flying in the open forest. The larva is very similar to that of *Troides priamus poseidon*, Doubleday, and feeds on the same plant, a species of *Aristolochia*: it is dark violet in colour, with tentacular fleshy pale red processes on the second, third, sixth, seventh, tenth and eleventh segments; those on the fourth, fifth, eighth and ninth are brownish-red; the process on the sixth segment is based on a pinkish-white spot; that on the seventh segment has a pale base; there is also a series of supra-spiracular processes. The pupa is pale brown, mottled with darker brown, with a pair of red spots on the middle of the back above; it is furnished with numerous foliaceous processes on the abdominal segments.

98. *Papilio fuscus rotalita, Swinhoe.

Röber as *P. beccarii*, Oberthür. This local race was described from Ké Island (*Halliburton*). We have not seen it. Mr. Kühn notes that he does not believe that this species ever came from the Ké Islands, as from 1889 to the present date no collector has been on the islands except himself; also that he (Kühn) up to 1896 has sent butterflies from the Ké Archipelago only to Dr. O. Staudinger, except one very small collection to Herr J. Röber, so from whom could Col. Swinhoe have obtained it? In the original description Col. Swinhoe gives Halliburton as the collector.

99. Papilio albinus thomsonii, Butler. Plate I, Fig. 7, *larva*.

Originally described from Ké Dulan. Mr. Rothschild in Nov. Zool., vol. iii, p. 322, n. 3 (1896), has described an ab. *mordingtoni* from Little Kei Island, from one female, captured by the late Capt. H. Cayley Webster. Mr. Kühn writes to de Nicéville that had he gone on shore on New Guinea the day Capt. Webster was murdered by the natives, he (Kühn) would have shared the same fate. It was quite an accident that on that day he, for the first time during the expedition, remained on board their vessel. We have not seen this aberration. *P. thomsonii* is a very variable butterfly: in some specimens there is a well-defined oblique subapical white band on the upperside of the forewing which often dwindles away to nothing; the large discal white patch on the upperside of the hindwing varies greatly in size, in some specimens its outer edge is even, and in the other extreme it is highly irregular, being continued along the veins towards the margin; sometimes the

patch ends posteriorly on the first median nervule, sometimes it reaches the submedian nervure; on the underside of the forewing the subapical band is sometimes present, usually absent; on the hindwing there is sometimes a discal series of large irrorated white spots from the costa to the first median nervule, usually entirely absent; the blue and orange submarginal markings are also more or less developed, sometimes both series are absent. It is very common on both Little and Great Ké Isles. The larva is as variable as the butterfly, and feeds on various trees, especially those of the Natural Order *Aurantiaceæ*. The larva when young resembles a bird's dropping. When full-grown it is smooth with no processes; the head is pale green, the body is dark green, becoming yellowish-green laterally, the second, third and fourth segments beneath and the legs are brown, the fifth to thirteenth segments beneath and the prolegs milky-white; the fifth segment bears posteriorly a broad transverse black band, and the eighth segment bears an oblique short black band on each side just above the spiracles; on the fourth segment are two subdorsal milky-blue points on each side one above the other, with a black spot just anterior to the spiracle; on the ninth segment are two subdorsal obliquely-placed milky-blue points on each side one above the other; and on the eleventh segment there is one similar point on each side. Mr. Kühn notes that the spots are sometimes greenish-brown.

100. • Papilio ægeus ormenus, Guérin.

Röber as *P. ormenus*, Guérin. Mr. Rothschild gives (*b* [2]) : ♂ — ab. *pandion*, Wallace, also (*f* [2]) : ♀ — ab. *polydorinus*, Haase, also (*g* [2]) : ♀ — ab. *amanga*, Boisduval, from the Key Isles, but they are unknown to us from the Ké Archipelago.

101. Papilio ægeus keianus, Rothschild. Plate I, Fig. 8, *larva*.

Mr. Rothschild has described this local race from the Little Kei Island (Kei Toeal); and also (*a*) : ♀ — f. *amaranta*, and (*b*) : ♀ —f. *blanca* from the same island (Nov. Zool., vol. iii, p. 422, n. 4 (1896). All our specimens appear to belong to this local race (not to *P. ormenus*, Guérin), as in the males the discal white band ends on the first median nervule, and does not reach the submedian nervure as it does in *P. ormenus*. In one of our male specimens the orange-red anal spot on the hindwing on the upperside is absent, typically it is present, and Mr. Rothschild has seen no specimen in which it is absent. It is rather rare on Little and Great Ké, the female var. *blanca* especially so, and seen on the wing only at the end of the wet season. The larva feeds on orangeaceous trees. It is brownish-green, with lighter very fine lines

on each segment; the head and legs are black, with two short conical yellow processes on the anterior edge of the second segment, the third, fourth and fifth segments have each three pairs of similar processes, the sixth, seventh, eighth, eleventh and twelfth segments have each two pairs of similar processes; on the fifth segment is a broad black band ending on each side on the spiracular region; on the ninth segment arising from the spiracular region and extending backwards over the tenth segment is a broad oblique lateral band, which terminates in the subdorsal region in a black conical process; on the eleventh segment is a much shorter posteriorly oblique broad black band, not reaching the two black conical processes one on each side of the subdorsal region; the thirteenth segment is white marked with large black patches; posterior to the spiracles the body and the prolegs are white, more or less interrupted with black lines.

102. *Papilio deiphobus, Linnæus.

Herr J. Röber in Tijd. voor Ent., vol. xxxiv, p. 275 (1891), described *P. deiphobus*, ab. *hypoxanthos* from the Key Islands. Neither Mr. Rothschild nor we have seen this species from thence. Mr. Rothschild spells the name "*hypoxanthus*."

103. Papilio euchenor obsolescens, Rothschild.

Rare in Little Ké, not so rare in Great Ké Island. Mr. Rothschild suggests that *P. ambrax epirus*, Wallace, may occur in the Key islands, but we have not obtained it there. It is found on the Aru islands.

104. Papilio codrus toealensis, Rothschild. Plate I, Figs. 9, 9*a*, *larva*; 9*b*, 9*c*, *pupa*.

Described from Little Kei Island (Kei Toeal). It is not very rare on Little Ké, but is difficult to catch. Kühn has bred it, but does not know the name of its food-plant. The larva is smooth, rapidly increasing in width to the fourth segment, thence decreasing in width to the anal segment, the head, body and legs are yellowish-green; on the dorsal area of the fifth segment are eight short indigo-blue marks which form two diamond-shaped figures; on the twelfth and thirteenth segments are five similar marks, one in the middle with four around the central mark forming an oblong figure; the second, third and fourth segments each bears at the side a short, bluntly-conical, pale red, fleshy process; the thirteenth segment with a pair of diverging similar processes; the spiracles are indigo-blue. The pupa is violaceous light greenish-gray, sometimes yellowish-green; the anterior portion is broad, and produced into a rather high process dorsally; from the apex of this

process (which is dark brown at the tip) descends on each side to the spiracle at about the middle of the pupa a fine indigo-blue line, with a large round blue spot in its middle; the spiracles are dark brown; the pupa ends in a somewhat sharp point.

105. Papilio eurypylus melampus, Rothschild.

Described from Little Kei Island (Kei Toeal). Mr. Rothschild (Nov. Zool., vol. iii, p. 425 (1896), has also described an ab. *rufinus* from the same island. *P. melampus* is very rare, and is found on both Little and Great Ké Islands.

106. Papilio sarpedon choredon, Felder.

Rare on Little and Great Ké Isles. Very quick on the wing.

107. Papilio agamemnon argynnus, Druce.

Recorded by Wallace from the Ké Island as *P. agamemnon*, local form *b*, and described from the Ké Island by Druce as *P. argynnus*. It is rather common on Little and Great Ké Islands. The larva feeds on *Anona muricata*, Linnæus, Malay name "Surakajah."

Family HESPERIIDÆ.

108. Tagiades japetus, Cramer. Plate I, Figs. 10, *larva*; 10*a*, 10*b*, *pupa*.

Röber, Ribbe and Butler. Very common on all the islands. The larva is greenish-white, the skin transparent, very finely striped with white, yellowish between the segmental folds; between the eighth and ninth segments are two yellowish coloured organs visible through the skin; the head is dark brown, heart-shaped, strongly indented above in the dorsal line. Pupa attached openly to a leaf by a few threads and by the cremastral hooks; pale yellowish, streaked throughout with reddish-brown; each wing-cover bears two large irregularly-quadrangular china-white spots, one at the base of the wing, which is the smaller, the other at the anal angle of the expanded wing, about twice as large; between the eyes in front are two white spots like a pair of spectacles; on the third, fourth and fifth abdominal segments is a triangular white spot on each side; the head is produced into a long thin pointed process. The larva lives on sweet potatoes.

109. * Ampittia maro, Fabricius.

Ribbe as *Pamphila maro*. This is probably a wrong identification.

110. *Notocrypta waigensis, Plötz.

Röber as *Plesioneura waigensis*. We have been unable to recognise this species from the description only. It was originally described from Waigou.

111. Notocrypta feisthamelii, Boisduval.

Not common on Great Ké, rare on Little Ké. Frequents wet places. Specimens from the Ké Isles and Northern Australia are peculiar in having the discal diaphanous band on the upperside of the forewing produced almost to the costa anterior to the costal nervure, instead of ending anteriorly on the subcostal nervure as usual.

112. *Telicota augias, Linnæus.

Röber as *Pamphila augias*. We have not seen it from the Ké Archipelago, but its occurrence there is not improbable.

113. Telicota bambusæ, Moore.

Apparently not rare. Kühn has sent de Nicéville seven male specimens.

114. *Telicota moseleyi, Butler.

Pamphila moseleyi, Butler, Ann. and Mag. of Nat. Hist., fifth series, vol. xiii, p. 198, n. 50 (1884).

Ké Dulan (*Butler*). Capt. E. Y. Watson in Proc. Zool. Soc. Lond., 1893, p. 103, places this species in the genus *Telicota*. It may be the same species as the next, with which it agrees in size. It was described from a male, while our *Padraona augiades*, Felder, is represented by a single female; the description of *P. moseleyi* does not agree with our specimen, but the differences may be due to sex.

115. Padraona augiades, Felder.

This species was described from a male from Amboina, which was subsequently figured in the "Reise Novara." Of the six distinct orange and black Skippers we possess from the Ké Islands, this is by far the largest. It appears to be rare, we have a single female only, which is very similar to examples of the same sex of *P. palmarum*, Moore, from India, but is much larger, and is more tawny, less purple, coloured.

116. Padraona procles, de Nicéville.

P. procles, de Nicéville, Journ. Bomb. Nat. Hist. Soc., vol. vii, p. 353, n. 21, pl. J, figs. 7, *male*; 8, *female* (1892).

Originally described from the Ké Isles, where it appears to be a common species on all the islands.

117. *Padraona sunias, Felder.

Dr. Butler records this species with a query from Ké Dulan. It was originally described from Amboina, but has not been figured. We have not been able to recognise it from the description only. Messrs. Elwes and Edwards place it as a synonym with a query of *Telicota* [*Padraona*] *dara*, Kollar (Trans. Zool. Soc. Lond., vol. xiv, p. 254 (1897).

118. *Padraona mæsa, Moore.

Röber as *Pamphila mæsa*. We have no species of the genus from the Ké Archipelago which agrees with *P. mæsa*.

119. Padraona, sp. 1.

Habitat: Little Ké Isle.

Expanse: ♂, 1·4; ♀, 1·5 inches.

Description: Male. Upperside, *both wings* black, with a slight purplish gloss; all the markings yellow; *cilia* yellow. *Forewing* with a short costal streak from the base of the wing; a similar streak in the discoidal cell; the space between these two streaks slightly irrorated with yellow scales; three conjoined subapical elongated dots, of equal length, the middle one placed slightly nearer the base of the wing than the others; four obliquely-placed discal spots, the anteriormost in the lower discoidal interspace small and quadrate, the second spot occupying the base of the second median interspace, its outer end excavated, the third spot larger than the second, occupying the middle of the first median interspace, its outer end excavated, the fourth spot crossing the middle of the submedian interspace, quadrate, its outer end excavated, its inner side not in a line with the spot anterior to it, being placed nearer the outer margin; from the posterior inner angle of this last-named spot runs a line of yellow scales along the submedian nervure to the base of the wing; a streak in the sutural area, its outer end in a line with the outer edge of the spot anterior to it. *Hindwing* with a rather small indistinct clump of setæ at the base; a discal transverse band, with even edges, and of equal breadth throughout, occupying the middle of the wing; some yellow setæ in the submedian interspace. Underside, *both wings* with all the veins narrowly black; a narrow black anteciliary line, ending on the hindwing at the first median nervule. *Forewing* black, but the costa and apex to just posterior to the first

median nervule, where it fines away to nothing, dull brownish-yellow; the markings much as on the upperside, but those on the disc broader. *Hindwing* dull brownish-yellow; the discal band much narrower than on the upperside. Abdomen narrowly ringed with yellow. Female. Differs from the male only in being a little larger.

This description has been drawn up by de Nicéville from three males and three females. It is a very distinct species, but he has not ventured to name it, as it has probably been already described from New Guinea or Australia, from whence he possesses but few species of the genus. It is very near to *P. autoleon*, Miskin, from Northern Australia.

120. Padraona, sp. 2.

Habitat: Ké Isles.

Expanse: ♂, ♀, 1·0 inch.

Description: Male. Upperside, *both wings* black, with golden-yellow markings; *cilia* yellow, marked with black at the ends of the veins, broadly on the forewing, narrowly on the hindwing. *Forewing* more yellow than black, there being a large basal triangular yellow patch from the costa to the submedian nervure and first median nervule, a short yellow streak in the submedian interspace, and a longer one in the sutural area; a discal yellow band extends nearly across the wing from close to the costa to the submedian nervure, its anterior portion shifted inwardly and out of line with the posterior portion, consisting of three conjoined increasing spots, the rest of the band consists of five spots, their inner edge straight, their outer edge toothed. *Hindwing* with a small yellow spot in the middle of the discoidal cell, with some yellow setæ anterior to it; a broad curved discal band, commencing just posterior to the costa by an oval spot, posterior to which is a small triangular spot placed nearer the margin than the spot anterior to it, and joined to the discal portion of the band, which latter crosses the middle of the wing, and is of equal width throughout, with slightly irregular edges. Underside, *forewing* marked somewhat similarly to the upperside, but the base of the wing is black; there is a small patch of yellow scales posterior to the three anterior spots of the discal band; also a submarginal yellow band beyond the discal band from the costa to the first median nervule. *Hindwing* yellow; the discal band defined on both sides with a narrow black line; a prominent anteciliary black thread. Abdomen black, narrowly ringed with yellow. Female, very similar to the male, but all the yellow markings on the upperside reduced in size, leaving more of the black ground-colour visible.

This description has been drawn up by de Nicéville from twelve

male and two female examples, which were received from Kühn as *Hesperia flavovittata*, Latreille, described from New Holland, with which description as far as it goes the specimens agree fairly well, but Mr. W. H. Miskin in his Syn. Cat. of the Lep. Rhop. of Australia places *H. flavovittata* in the genus *Taractrocera*, distinguished by its short round-clubbed antennæ, while the species described above has the longer pointed-clubbed antennæ of the genus *Padraona*. It appears to be quite a distinct species, but has probably already been named, indeed, in de Nicéville's collection from Mackay in North Australia are exactly similar specimens, which agree with Hewitson's description of "*Ancyloxipha*" *agraulia*, from the same region. The correct spelling of the genus is *Ancyloxypha*. Miskin places the latter species in the genus *Apaustus*, Hübner, and gives *Pamphila sunias*, Felder (see no. 117 above) as a synonym, though it has eight years' priority.

121. Padraona, sp. 3.

Kabitat: Ké Isles.

Expanse: ♂, ·8; ♀, ·9 of an inch.

Description: Male. Upperside, *both wings* black, with yellow markings; *cilia* of the forewing black anteriorly, becoming yellow posteriorly, of the hindwing yellow, the terminations of the median nervules streaked with black. *Forewing* with a triangular yellow streak from the base of the wing to beyond the middle, not quite reaching the costa anteriorly, bounded by the submedian nervure and second median nervule posteriorly, its outer edge inwardly oblique; three conjoined subapical spots, the anteriormost a mere dot, the second twice as large as the one before it, the third twice as large as the second; a discal band consisting of five portions, separated from the subapical spots, the two anteriormost portions very small, the third elongated, occupying the base of the second median interspace, the fourth of the same length as the third, occupying the middle of the first median interspace, the fifth very narrow and linear; the outer edge of this band is nearly even, the inner edge very irregular, owing to the third and fourth spots being so much broader than the others; a yellow streak occupying the basal half of the sutural area. *Hindwing* with a small yellow spot in the middle of the discoidal cell; a broad discal band occupying the middle of the wing, both edges irregular. Underside, *forewing* marked as above, but the apex is broadly yellow. *Hindwing* yellow throughout, except a broad black streak in the submedian interspace; the spot in the cell and the discal band defined outwardly by a narrow black line; an anteciliary black thread.

Abdomen yellow, narrowly banded with black. Female differs from the male only in having the wings broader, and the apex of the *forewing* less produced.

Described by de Nicéville from six male and one female specimens. It is an easily recognised species, is the smallest of the yellow and black species occurring in the Ké Archipelago, and is not named here as it is probably known already from neighbouring islands. It is near to *P. mæsoides*, Butler, described from Malacca, and figured by Moore from Ceylon, but is much smaller, and differs a good deal in the details of the markings.

122. Baoris (*Chapra*) mathias, Fabricius.

The form of this species occurring in the Ké Isles has in the male only two most minute dots in the median interspaces in the forewing, on the underside of the hindwing the discal spots are also very small; the female is normal. *C. agna*, Moore, has the spots smaller than *C. mathias*, the present form has them smaller still. It is a common species on Little Ké Island.

123. Baoris (*Parnara*) philippina, Herrich-Schäffer.

This species has no spots in the discoidal cell of the forewing, there is a discal series normally of seven spots, but several of the anterior ones are often wanting, in an extreme form there are only two spots in all placed in the median interspaces. It is a common species on Little Ké Island.

124. * Baoris (*Parnara*) larika, Pagenstecher.

Röber records this species from Key as *Pamphila larika*. It was described from Amboina (Jahr. des Nass. Ver. für Natur., vol. xxxvii, p. 207, pl. vii, fig. 1, *female* (1884). It is evidently closely allied to the preceding species, but has all the spots on the upperside of the forewing larger. Doubtless Herr Röber did not know *Parnara philippina*, Herrich-Schäffer, or he would have so named his specimens from Ké. It is very doubtful if two such closely allied species as *P. philippina* and *P. larika* are found in the Ké Archipelago, even if they be really distinct.

125. Hasora doleschallii, Felder.

Röber as *Ismene doleschalli* [sic!]. This beautiful species was originally described from the Moluccas. It is rather rare on Little and Great Ké Islands. The opposite sexes do not differ in markings and coloration. Kühn has bred it, but has not sent de Nicéville a description of its transformations.

126. Hasora discolor, Felder.

This species has been identified by de Nicéville from a coloured drawing of an unique specimen in Kühn's collection, taken on Little Ké Island, and which appears to be a female. The species was originally described doubtfully from Java. It is one of the handsomest "*Ismenes*" known. In de Nicéville's collection are both sexes from Northern Australia.

127. Hasora (*Parata*) malayana, Felder.

Ribbe as *Ismene malayana*. Identified by de Nicéville from three females which agree exactly with Felder's figure of the species, and with some female specimens in de Nicéville's collection from the Andaman Iles. The Ké examples have no transparent spots whatever on the fore-wing. Messrs. Elwes and Edwards in their recent monograph, p. 301, place this species as a synonym of *H. chromus*, Cramer, which latter according to Dr. Aurivillius is a synonym of *H. alexis*, Fabricius (Ent. Tids., vol. xviii, p. 150, n. 68 (1897).

128. Badamia exclamationis, Fabricius.

Not uncommon on Little and Great Ké Islands. It is found from India to Australia.

Explanation of Plate I.

Fig. 1, *larva*, *Euplœa* (*Hirdapa*) *assimilata*, Felder, p. 256.
„ 2, *larva*; 2*a*, *head of larva*; 2*b*, 2*c*, *pupa*, *Cethosia cydalima*, Felder, p. 258.
„ 3, *young larva on food-plant*; 3*a*, *full-grown larva*, *Neptis* (*Rahinda*) *consimilis*, Boisduval, p. 260.
„ 4, 4*a*, 4*b*, *pupa*, *Charaxes keianus*, Rothschild, p. 262.
„ 5, *larva*; 5*a*, 5*b*, *pupa*, *Catopsilia crocale*, Cramer, p. 271.
„ 6, *larva*; 6*a*, 6*b*, *pupa*, *Papilio polydorus thessalia*, Swinhoe, p. 274.
„ 7, *larva*, *Papilio albinus thomsonii*, Butler, p. 274.
„ 8, *larva*, *Papilio ægeus keianus*, Rothschild, p. 275.
„ 9, 9*a*, *larva*; 9*b*, 9*c*, *pupa*, *Papilio codrus toealensis*, Rothschild, p. 276.
„ 10, *larva*; 10*a*, 10*b*, *pupa*, *Tagiades japetus*, Cramer, p. 277.

Descriptions of some new plants from the North-Eastern Frontiers of India. —*By* G. King *and* D. Prain.

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While dealing with various collections received from the North-Eastern Frontiers of the Empire in connection with the Botanical Survey of India, the writers have had to dispose of a number of species that appear to be new to science and that are unprovided with names in the Herbarium of the Royal Botanic Garden, Calcutta; the present paper contains descriptions of a few of the more notable of these. A considerable proportion of them it was necessary to have compared at Kew in order to make certain that they were unknown or unrepresented in the unrivalled collection there; our thanks are due to Mr. Thiselton-Dyer, the Director, and to Dr. Stapf, the Assistant for India in the Herbarium there, for kind assistance in connection the examination of these.

ANONACEÆ.

1. Goniothalamus pedunculatis *King & Prain*; frutex?, ramulis gracilibus glabris. *Folia* tenuiter coriacea, oblonga, plus minusve oblanceolata, breviter acuminata, basi cuneata; utrinque glabra, hebetia, subtus ex sicco pallide brunnea; nervis secundariis 10–12-jugis curvis intra marginem inosculantibus subtus plus minus prominentibus supra obsoletis; petiolis brevibus ·25–·3 poll. longis, laminis 6·5–9 poll. longis, bis 1·5–2·5 poll. latis. *Flores* solitarii erecti parum supra-axillares 1·5 poll. longi, pedicellis plus quam uncialibus adpresse puberulis, basin versus minute bracteolatis. *Sepala* carnosa, libera, ovata subacuta patentia utrinque puberula, ·3 poll. longa. *Petala* carnosa, seriei exterioris oblique ovato-lanceolata, acuminata, basi augustata et incrassata ubi intus excavata, extus adpresse pubescentia intus basi puberula ceterum glabra 1·5 poll. long, ·75 poll. lata; petala seriei interioris ovata, acuta basi angustata utrinque sed praesertim extus pubescentia, dimidio summo in calyptram basi 3-fenestratam cohaerentia. *Antherae* ∞, sessiles lineares apice capitatæ. *Pistillia* circa 20, germina linearia, stylis linearibus pubescentibus duplo breviora. *Fructus* nondum communicatus.

In Burma superiore: in montibus Kachin nuncupatis, *Kingii mercenar.!*

Of all the Indian species of this genus *G. pedunculatis* most resembles the Ceylonese *G. Gardneri* H. f. & T. and *G. Thwaitesii* H. f. & T.

STERCULIACEÆ.

2. STERCULIA COGNATA *Prain;* arbuscula ramulis gracilibus parce puberulis cortice brunneo obtectis. *Folia* glabra brevissime petiolata vel sessilia auguste lanceolata medio versus basin sensin attenuata apice anguste ovato-acuminata, margine integra, chartacea, subtus prominentius 25–30-nervia simulatque reticulato-venosa. *Flores* albi pedicellati pedicellis filiformibus glabris, in racemis quam folia dimidio brevioribus dipositi; *calyce* campanulato laevi intus glabro extus parcissime puberulo, lobis linearibus erecto-patentibus tubo multo longioribus. *Follicula* oblonga acuta breviter pedicellata extus velutina intus glabra utrinque rubra; semina nigra nitida subsphaerica.

In montibus Kachin nuncupatis; *Kingii mercenar. !*

Folia 8–12 poll. longa, ·75–2·5 poll. lata, petiolis nunquam ·2 poll. saepius omnino absentibus; *racemis* 4 poll. longis, pedicellis capillaribus ·3 poll. longis; *floribus* ·6 poll. longis; *folliculis* 2·5 poll. longis, ·75 poll. latis; *seminibus* ·5 poll. diam.

Nearest *S. Roxburghii*, *S. parvifolia*, and *S. striatiflora* but easily distinguished by the sessile leaves and the other characters mentioned.

CONNARACEAE.

3. TAENIOCHLAENA BIRMANICA *Prain;* frutex ramulis puberulis teretibus cortice minute lenticellatis. *Folia* imparipinnata, foliolis 2–3-jugis, coriaceis, nervo mediano supra puberulo excepto glabris, oblongo-lanceolatis apice emarginato-caudatis basi inaequaliter cuneatis breviter petiolulatis, rachide puberulo. *Flores* in racemis brevibus vel paniculis congestis axillaribus dispositi, bracteis minutis, pedicellis longiusculis. *Calyx* basi hemisphaericus, laciniis valvatis oblongis acutis fructu revolutis. *Petala* ... *Stamina* 10, alterna paulo breviora, filamentis basi vix connatis. *Carpella* 5, sessilia, styli parum elongati, puberuli. *Capsulae* 1–3, sessiles, ovoideae, parum apiculatae, extus intusque glaberrimae. *Semen* oblongum basi arillo adnato dimidiato suffultum, testa nitida; cotyledones amygdalinae.

BURMA: in montibus Kachin nuncupatis, *Kingii mercenar. !*

Folia 6-8 poll. longa, rachide 3-4 poll., lamina terminali 3–5 poll. longa 1·5 poll. lata, lateralibus 1·5–3 poll. longis, petiolulis ·15 poll. *Racemis* 1·5–2 poll. longis, pedicellis ·3–·4 poll. longis. *Capsulis* ·6 poll. longis, ·3 poll. latis.

Much resembles the only other known species, *T. Griffithii* Hook. fil., from Malacca, but with differently shaped leaflets and with fruits that are glabrous externally instead of pubescent.

LEGUMINOSAE.

4. Indigofera nigrescens *Kurz MSS.* in *Herb. Calcutta;* fruticosa ramulis adpresse brunneo-setosis, foliolis minoribus 17–21, oppositis membranaceis, atro-viridibus, utrinque sparse adpresse puberulis. *Flores* in racemis angustis, elongatis, breve pedunculatis dispositi, bracteis linearibus alabastris longioribus, pedicellis brevissimis, *calyce* oblique campanulato, dentibus lanceolatis tubum excedentibus. *Corolla* rosea. *Legumen* lineare turgidum, adpresse puberulum, rectum, minute apiculatum, suturis parum incrassatis; semina 6-8.

In montibus Khasia; apud Shillong, *G. Mann! Clarke* n. 5848! In montibus Kachin, piope Myitkyina, *Kingii mercenar.!* In valle Taping, Yunnan austro-occidentalis, apud Momien, *J. Anderson!* In montibus Shan, ad Maymyo, *Kingii mercenar.!*

Folia 3–4 poll., foliola ·5–·8 poll. longa, ·3–·4 poll. lata. *Racemi* 4–8 poll. longi, pedunculis 1-pollicaribus, bracteis ·2 poll., calyce ·05 poll. longo, corollis ·2 poll. longis tantum. *Legumen* ·75–·85 poll. longum; ·1 poll. crassum.

Very closely related to *Indigofera atropurpurea* with which it has been often identified and under which name it is usually met with in collections. The smaller flowers with longer calyx-teeth, shorter faintly apiculate and puberulous instead of glabrescent pods, as well as the very dark green leaves with more numerous and much smaller leaflets amply distinguish it.

5. Spatholobus Pottingeri *Prain;* frutex scandens robusta, ramis cylindraceis gracilioribus cortice brunneis, pilisque reflexo-adpressis sparse pubescentibus. *Folia* pinnatim 3-foliolata rachide pilis patentibus pallide fusco-hirsuta, foliolis subcoriaceis ambitu ovatis margine sinuatis supra uniforme subtus praesertim nervis pilis adpressis sparse hirsutis, nervo mediano subtus petiolulisque brevibus pilis patentibus strigoso, foliola terminali aeque basi late cuneata apice late truncata, nervis prominentibus lateralibus 9-jugis mediano in acumine subulato producto; folfolis lateralibus paullo minoribus basi parum inaequali intus cuneatis extus ovato-rotundatis nervis lateralibus 7–8-jugis, mediano ultra apicem abrupte acutam producto, stipulis deciduis lanceolatis stipellisque persistentibus subulatis adpresse hirsutis. *Flores* racemosi in paniculis terminalibus iterum terve ramosis ramis angulatis parcius pubescentibus dispositi, bracteis brateolisque caducis minutis, pedicellis capillaribus calyce brevioribus. *Calyx* dense olivaceo-velutinus, dente summo apice emarginato ceteris anguste deltoideis omnibus tubo parum brevioribus. *Corolla* purpurea, vexillo ungue angusto cuneato apice emarginato, petalis ceteris unguibus gracilibus calycem subaequantibus, alarum laminis angulo inferiore utrinque barbellatis.

Stamina 2-adelphia filamentis vaginae carinalis alternis longioribus, filamento libero vexillari quam vaginam multo breviore. *Ovarium* puberulum breviter stipitatum, ovulis 2. *Legumen* ignotum.

In montibus KACHIN nuncupatis, apud Namli, 2000 p. s. m., *Pottinger !*

Ramulis floriferis ·25 poll. diam.; *foliis* 8 poll. longis, rachide 2·5 poll. parte terminali partem petiolarem fere aequante, petiolulis ·15 poll. stipellis ·2 poll. brevioribus, stipulis ·25–·3 poll. longis; lamina terminali 5·5 poll. longa 4 poll. lata, lateralibus 4·5 poll. longis his 3 poll. latis, acuminibus apicalibus ·3 poll. longis. *Panicula* tota pyramidali 1·5–2-pedalis, paniculis secundariis 8–10 poll. longis, iisque ordine tertio 4–6 poll. longis, racemis singulis 1·5–2-pollicaribus, 12–20-floris, pedicellis ·12 poll., calyce ·2 poll., corolla ·3 poll. longis.

A very fine plant nearest to the Malayan species *S. gyrocarpus* and *S. ferrugineus* but abundantly distinct from these and from all the other Indian species by the sinuate finely apiculate leaflets.

CRUDDASIA PRAIN.

Calycis lobi acuti, 2 superiores in unum apice minute 2-dentatum connati, caetera aequilata triangulares infimo tamen lateralibus parum longiore. Vexillum suborbiculatum, basi nec inflexum; alae oblongo-ovatae basi carinae adhaerentes; carina cymbiformis erostris alis aequilonga. Stamen vexillare caeteris arcte connatum, antherae uniformes. Ovarium sessile ∞-ovulatum; stylus filiformis incurvus sub stigmate terminali summo apice parce penicillatus ceterum glaber. Legumen elongatum, 2-valve, planum, coriaceum, compressum intus inter semina tenuiter farctum. Semina plano-compressa, suborbicularia, hilo ovato, estrophiolata. Caulis alte volubilis, foliis pinnatim 5-foliolatis, foliolis anguste ovatis, stipellatis. Stipulae spinuloso-setaceae caducae, basifixae. Flores purpurascentes, in pedunculis elongatis fasciculato-racemosi, fasciculorum rhachide nodiformi. Bracteae bracteolisque caducae. Calyx vexilloque extus sericeus.

Species singula, montium Kachin incola. Genus subtribubus *Galactearum*, praesertim sectioni *Collaeae* generis *Galactiae* cui etiam stamen vexillare cum ceteris medio connatum, vel *Dioclearum* praesertim generi *Puerariae* fere aeque recte attribuendum; statim tamen ab ambabus stylo more *Euphaseolarum* nonnullarum circa stigma barbato differt, ideoque potius pro genere distincto *Dioclieis* uti *Clitoria Glycineis* relato habenda.

6. CRUDDASIA INSIGNIS *Prain.*

In montibus KACHIN nuncupatis, 5000 p. s. m., *Kingii mercenar. !*

Petioli 2-4 poll. rachides communi 1·5 poll. supra canaliculati,

retro-setosi, laminae ovato-lanceolatae 3–6 poll. longae, 1·5–2·5 poll. latae, supra glabrae, subtus adpresse pubescentes, inter nervis 12–15-jugis subtus prominentibus reticulato-venosae; stipellae filiformes ·1 poll. longae, petiolulae 1·5 poll. longae; stipulae rigidae ·2 poll. longae. *Racemi* 8–12 poll. longi pedunculis 3 poll. longis, nodis vix ·2 poll. remotis, pedicellis ·12 poll. longis. *Calyx* ·2 poll. tubo campanulato dentibus aequilongo. *Corolla* ·4 poll. longa, vexillo orbiculato ·35 poll. lato, extus dense sericeo. *Legumen* 3 poll. longum, ·3 poll. latum, seminibus 10–12, ·25 poll. longis, ·2 poll. latis.

7. Pueraria bella *Prain*; volubilis ramis gracilibus glabris, foliis 3-foliolatis stipulis caducis stipellis capillaribus, foliolis chartaceis ovatis longe acuminatis basi cuneatis utrinque petioloque glabris, petiolulis parce puberulis. *Flores* in racemis elongatis simplicibus vel parce ramosis dispositi, rachide parce puberulo, pedicellis brevissimis, bracteis deciduis bracteolis 2 sub calycem persistentibus cordato-ovatis parce puberulis. *Calyx* campanulatus glabrescens, segmentis 2 summis in labium apice emarginato truncatum connatis, caeteris ovatis obtusis subaequilongis omnibus tubo parum brevioribus. *Corolla* purpurea calyce plus duplo longiore, vexillo basi auriculis inflexis appendiculato, carina rectiuscula alas subaequante. *Stamen* vexillare omnino solutum, antherae uniformes. *Ovarium* subsessile ∞-ovulatum stylus filiformis superne inflexus, imberbis; stigma capitatum. *Legumen* ignotum.

In montibus Kachin nuncupatis, prope Myitkyina, *Kingii mercenar.!*

Foliola 6 poll. longa, 3 poll. lata, stipellis filiformibus ·25 poll. longis, petiolulos aequantibus. Bracteolae ·1 poll. longae. Calyx ·25 poll. longus. Corolla ·7 poll. longa.

This very distinct species belongs to the subgenus *Neustanthus*, which is marked by having entire leaves that are contemporaneous with the flowers. The general appearance of the plant most readily recalls that of *Pueraria Thunbergiana* but its stipules are not persistent as in that species and the calyx is widely different. The fact that the vexillary stamen is quite free marks it as an aberrant *Pueraria* to be placed near *P. peduncularis* which exhibits the same character. The flowers—though not the bracts—recall those of *Mastersia assamica* and till ripe fruits are reported it can not be quite certain that it should not be referred to that genus. Meanwhile it is most satisfactorily located in *Pueraria* of which it has all the facies.

8. Derris latifolia *Prain*; arbor alta, foliis magnis, foliolis 5–7 chartaceis ovato-lanceolatis apice acuminatis basi cuneatis vel subrotundatis. *Flores* in paniculis amplis thyrsoideis axillaribus dispositi

rachide ramisque glabris angulatis nodis nec tumidis nec productis, pedicellis distinctis approximatis; *calyce* glabrescente campanulato margine truncato; *corollae* vexillo erecto orbiculari, basi ecalloso rotundato; *filamenta* 2-adelphia glabra; *ovario* puberulo, ovulis 3. *Legumen* ligulatum tenue glabrum suturis utrinque alatis nec sinuatis.

In montibus KACHIN, apud Namli, 4000 p. s. m., *Kingii mercenar.!*

Folia 18–24 poll. longa, foliolis 8-10 poll. longis 3·5–4 poll. latis utrinque glabris petiolulis ·25 poll. longis. *Paniculae* 20–25 poll. longae, ramulis 2–4 poll. longis; pedicellis ·1 poll. longis; *calyce* ·12 poll. longo ·15 poll. lato; *corolla* ·3 poll. longa, vexillo ·35 poll. lato; *legumine* 3·5 poll. longo, 1 poll. lato; alis ·15–·2 poll. latis subaequilatis.

This species is very nearly related to *D. thyrsiflora* which it much resembles in flowers and pods except in having them distinctly pedicelled; in this latter respect it more nearly approaches *D. Wallichii* of which we were at first inclined to treat it as a large flowered variety. The much larger leaflets however and the fact that this is a tall tree makes it preferable to treat it as a distinct species.

9. DALBERGIA KINGIANA *Prain;* frutex scandens lignosa, cortice lenticellato, foliolis 5–7 anguste ovatis apice breviter acuminatis, basi cuneatis supra glabris subtus sparse puberulis, coriaceis. *Flores* paniculati, paniculis axillaribus, foliis brevioribus, ramulis subcorymbosim dispositis, pedicellis brevissimis; *calyce* dense ferrugineo, dentibus 3 inferioribus anguste triangulis, summos breviores latioresque excedentibus; petalorum unguibus calyce aequilongis; staminibus 9 monadelphis; ovario glabro 2-ovulato; stylo subulato. *Legumen* ignotum.

In montibus KACHIN nuncupatis, *Kingii mercenar.!*

Foliola 2·5–3 poll. longa, 1–1·25 poll. lata; rachide 3 poll. longo petiolulis ·2 poll. longis; paniculae 3·5 poll. longae, ramulis 1–1·5 poll. longis, floribus ·25 poll. longis.

Very near to *Dalbergia Benthami* Prain, (D. rubiginosa *Benth. Flor. Hong-Kong* 93, *not of Roxb.)* from Hong-Kong, but with quite different leaflets and with rather longer panicles of similar flowers. Also near *D. rubiginosa* Roxb., from Western India, but again with different leaflets and rather larger flowers. In general appearance *D. Benthami* resembles *D. rubiginosa*, to which Mr. Bentham has referred it, but the leaflets of the Chinese plant are thicker, narrower towards the tips, and have a different pubescence beneath; the flowers too of the Chinese plant are very like those of the present Kachin species and are considerably larger than there of *D. rubiginosa*.

10. BAUHINIA POTTINGERI *Prain*; robusta scandens, ramulis lenticellatis, glabris, cortice brunneis; forsan cirrhifera. *Folia* quam lata parum longiora, basi cordata, quadrante antico sinu angusto apiculato

2-loba; crasse coriacea, supra nervis parce hirsutis exceptis glabra subtus parcissime ferruginea, nervis 9–11, petiolo glabro, stipulis caducis. *Flores* racemosi, racemis terminalibus ferrugineo-velutinis bracteis lanceolatis pedicellos erecto-patentes fere aequantibus, bracteolis bracteis similibus, alabastris clavatis parte superiore oblonga basin ampullaeformem excedente. *Calyx* ferrugineo-pubescens, limbo 5-partito segmentis oblongo-lanceolatis tubo basin versus parum dilatato. *Petala* 5, subaequalia, oblanceolata obtusa, longe unguiculata magnopere exserta, utrinque dense sericea. *Stamina* 3 fertilia, antheris lineari-oblongis, filamentis medio parum incrassatis. *Ovarium* distincte stipitatum, dense ferrugineum, stylo crasso ferrugineo, stigmate obliquo peltato. *Legumen* ignotum.

In montibus Kachin nuncupatis, inter Namlao et Bansparao, *Pottinger !*

Foliis 2·5–4 poll. longis, his 2·25–3 poll. latis, petiolo 1–1·3 poll. longo. *Racemis* 6 poll. longis, 4·5 poll. latis, pedicellis ·75 poll. longis; alabastris 1·75 poll. longis. *Calycis* tubo ·75 poll., limbo 1 poll. longo. *Petalis* 2 poll. longis. *Filamentis* 2·5 poll. longis.

A very fine species, nearest to *B. nervosa*, a Khasia plant, from which it differs in its leaves with fewer nerves, its shorter pedicels, and its rather larger petals silky instead of rusty externally. In the size of its flowers its only rival in the group to which it belongs is *B. excelsa* Bl., from Borneo; the shape however of the petals is different, those of *B. excelsa* being narrower and more acute at the apex.

SAXIFRAGACEÆ.

11. Hydrangea Pottingeri *Prain*; fruticosa, ramis novellis pubescentibus; *foliis* oblongo-lanceolatis acuminatis margine basi cuneato excepto serratis, utrinque nervis adpresse puberulis ceterum glabris, nervis 9–10-paribus ascendentibus; cyma ampla dichotoma ramis pedicellisque pubescentibus ebracteata, florum radiantium sepalis 3 breviter unguiculatis late ovatis subacutis versus apicem grosse serratis ceterum integris venis prominulis utrinque reticulatis glabris, fertilium dentibus calycinis triangulis tubo brevioribus; *petalis* . . . ; *staminibus* . . . . . ; *stylis* 3 erecto-patulis ovario globoso parum brevioribus.

In montibus Kachin nuncupatis, 4100 p. s. m., *Pottinger !*

Folia 3-4 pollicaria, 1·25 poll. lata, petiolis ·5–·6 poll. *Cyma* pedunculo 1·25 poll. longo, pedunculis secundariis 1-pollicaribus, pedicellis florum radiantium gracillimis 1·5 poll., pedicellis fertilibus ·2–·25 poll. *Capsula* ·08 poll. diam.

POTTINGERIA Prain.

Calycis tubus brevis late campanulatus basi ovarii adnatus, lobis 5 ovatis acutis persistentibus sinubus latis. *Petala* . . . *Stamina* 5 erecta ad marginem disci perigyni affixa, filamentis sursum subulatis, basi parum explanatis ibique extus glandula mediana ornatis; antherae . . . . .; ovarium semisuperum. *Capsula* supera oblonga, longitudinaliter parum 3-sulcata per stylos 3-partibilis stigmatibus cohaerentibus septicide 3-valvis, placentis a marginibus introflexis carpellorum simulac secedentibus persistentibusque, singulis utroque margine semina circa 10 triente summo tantum fertili gerentibus. *Semina* anguste fusiformia testa crustacea parum reticulata utrinque parum producta; embryo cylindrica majuscula in axe albuminis carnosi.—*Folia* alterna brevipetiolata, 5-nervia. *Cymae* multiflorae axillares. Species singula montium Kachin incola.

12. Pottingeria acuminata *Prain; folia* ovato-acuminata crasse coriacea utrinque glabra subtus punctata, breve petiolata, margine integra nervis 5 mediano proximisque subaequalibus marginalibus tenuioribus omnibus plus minus subtus prominentibus; *cymae* axillares pedicellis gracilibus calyce paullo longioribus, bracteis parvulis.

In montibus Kachin, 3,000 p.s.m.; *Pottinger!*

Folia 2–3·5 poll. longa ·75–1·5 poll. lata, petiolis ·2 poll. longis. *Cymae* 1·5–2 poll. longae 1 poll. latae, pedicellis ·15 poll. longis; *capsulis* ·2 poll. longis ·15 poll. latis.

A very distinct genus of the Tribe *Escallonieae*, apparently best located near *Itea* which it resembles in having a similarly partible style with a similarly half-superior ovary but from which it differs markedly in having 3 instead of 2 carpels and in the capsule so dehiscing that when the valves fall away the three filiform placentas persist. The cinnamon-looking or Melastomaceous-like leaves and the very different inflorescence also help to give it a quite distinct facies.

Unfortunately our solitary specimen has been collected just as the plant was passing out of flower so that the petals and anthers have all dropped, and it is not therefore possible to state whether the former are valvate or imbricate.

COMBRETACEÆ.

13. Terminalia argyrophylla *King & Prain;* arbor magna, ramulis gracilibus foliisque utrinque dense tomento adpresso persistente argyreis; *foliis* suboppositis petiolatis ovatis basi rotundatis apice acutis, nervis 8–9-jugis ascendentibus subtus prominulis, petiolis apice 2-glandulosis; *floribus* parvis, lutescentibus, spicatis, spicis in paniculis terminalibus dispositis, bracteolis lanceolatis deciduis quam flores duplo

brevioribus; *calyce* extus glabro limbo late campanulato lobis 5 parvis acutis, intus dense argyreo-villoso, tubo ovato tereti; *fructus*. . . . .

In montibus Kachin nuncupatis; *Kingii mercenar.!*

Folia petiolis ·75 poll., laminis 4 poll. longis 1·75 poll. latis. *Spicae* singulae 3·5–4 poll. longae, paniculis 8 poll. longis, 6 poll. latis.

This is very different in foliage from any species of *Terminalia* in Herb. Calcutta or in Herb. Kew; it is reported by the native collector (Shaik Mokim) to be a "timber tree." The fruits sent as belonging to it are drupes shaped like those of *T. Chebula* but much smaller, being only ·5 in. long; as however there are none of them attached to leaf-specimens it must remain for the moment doubtful if they really belong and if therefore the species is really referable to § *Catappa*, which must be the case if the fruits in question be those of this tree.

CUCURBITACEÆ.

14. Alsomitra pubigera *Prain*; *foliis* breve petiolatis, pedato-5-foliolatis, foliolis petiolulatis, membranceis ovatis, acutis subobtusis vel retusis, margine integris puberulis; basi, terminali excepto, parum obliquis, membranaceis, supra nervis densius ceterum parcissime puberulis; subtus, nervis exceptis, glabris, penninerviis, petiolulisque dense puberulis; cirrhis apice bifidis; *fructu* puberulo; *seminibus* stramineis utrinque spinuloso-rugosis.

In montibus Kachin nuncupatis, *Kingii mercenar.!*

Alte scandens; rami graciles elongati, ramosi, puberuli sulcati. *Petiolus* vix striatus ·4–·5 poll. longus; petioluli, terminalis ·3 poll., laterales ·15 poll. longi; foliola utrinque intense viridia, 1·5–4 poll. longa, ·75–2·5 poll. lata. *Cirrhi* graciles sulcati puberuli. *Paniculae* majusculae valde plurifloraе. *Pedunculus* communis lateralis terminalisve, gracilis parum sulcatus dense puberulus 2–4 poll. longus, pedicelli capillares puberuli ·4 poll. longi, bracteolae subulatæ. *Calyx* puberulus segmentis lanceolatis, linearibus, acutis, corolla glabriuscula, segmentis ovatis acutis ·1 poll. longis. *Fructus* subcylindricus densius velutino-puberulus, ab apice ad basin leviter attenuatus, apice truncatus, basi subacutus 2·25 poll. longus, ·5 poll. crassus. *Semina* ambitu subtriangularia, margine profunde lobata basi oblique attenuata, ·3 poll. longa, ·25 poll. lata, ·15 poll. crassa; ala obliqua alba translucens anguste oblonga, apice rotundata ·75 poll. longa, ·25 poll. crassa, utrinque areola clypeata spinuloso-rugosa exsculpta.

This very distinct species is most nearly related to *A. clavigera*, the fruits, except for being densely puberulous, being very like those of that species. But it differs very markedly in its pedate leaves and in its spinulose-rugose seeds. By an oversight a number of flowering speci-

mens of this species have been distributed to various European Herbaria under the name *Gynostemma pedatum*; recipients of these specimens are hereby requested to correct the name. These flowering examples were received in November, 1897, the fruiting ones in January, 1898.

ARALIACEÆ.

15. Pentapanax stellatum *King*; scandens, novellis digito minimo fere crassis, cortice pallido glabro lenticellis ornato. *Folia* pinnata, rachide gracile glabra basi parum dilatata; foliolis 5, jugis 2 cum terminali, late ovatis vel ellipticis, apice abrupte acutis, basi rotundatis margine integris parum recurvis; supra glaberrimis, subtus pilis longioribus stellatis dense obtectis; nervis 4–5-jugis parum incurvis subtus prominulis supra distincte impressis; petiolulis inaequilongis iisque jugi summi fere 0. *Panicula* terminalis basi bracteis lanceolatis pluribus obsita, sparse ferrugineo-puberula, ramis inferioribus patentibus remotis, singulis umbellas plures 15–25-florales pedunculatas ferentibus, parte summa umbellas simplices ferente. *Flores* late oblongi; *calycis* tubo late campanulato, limbo 5-dentato, dentibus latis obtusis; *petalis* late ellipticis. *Fructus* ovoideo-globosus prominenter 5-costatus, glaber.

Burma: in montibus Shan nuncupatis, apud Fort Stedman; *Kingii mercenar.!*

Folia 9–15 poll. longa, foliolis 3–5 poll. longis, 2·5–3·25 poll. latis petiolulis folioli terminalis 1–1·5 poll., lateralium inferiorum ·1–·15 poll. longis, lateralium summorum fere obsoletis. *Panicula* 12–18 poll. longa, ramis inferioribus 3–4 poll. *Flores* ·1 poll. lati. *Fructus* ·15 poll. longus.

Pentapanax is a small genus of which hitherto only six species have been described; and of these only one has hitherto been recorded from Burma. The species now for the first time described differs from all the others in the dense and very peculiar pubescence by which the under surfaces of the leaves are clothed. The hairs are long, flexuose, and united to form large stars of a pale yellowish-brown colour.

16. Heptapleurum (§*Agalma*) Lawranceanum *Prain*; arbor?, novellis parce puberulis. *Folia* digitata foliolis 7–9, late ellipticis apice mucronulatis, margine integris utrinque glaberrimis, crasse coriaceis; nervis 20–30-jugis obscuris petiolulis glabris. *Panicula* ramosa, ramis puberulis ramulos fere farinoso-puberulos umbelliferos distinctes emittentibus, umbellis 12–20-floris, pedicellis aequilongis floribus parum brevioribus. *Calyx* margine truncatus. *Petala* valvata, circa 7, triangula, intus glabra extus pilis coactis dense obtecta. *Stamina* petalis isomera antheris oblongo-ovatis sursum parum angustatis. *Fructus*

turbinatus apice truncatus, medio columna cylindrica (stylis connatis) coronatus, 7-angulatus.

Burma superior: in montibus Kachin; *Pottinger !*

Foliola 10 poll. longa, 6 poll. lata. *Paniculae* rami pedales, ramulis 1·25 poll. longis, pedicellis ·2 poll. longis. *Flores* ·25 poll. longis, ·2 poll. latis.

17. Dendropanax Listeri *King;* arbuscula glabra parva, novellis cortice grosse lenticellatis ex sicco pallide brunneis. *Folia* simplicia, tenuiter coriacea, late elliptica breviter acuminata, basi cuneata, margine integra vel dentibus paucis remotis minutis irregulariter serrata; utrinque glaberrima supra hebetia; subtus reticulato-venosa, nervis secundariis distinctis; costa mediana subtus prominente a basi venas 2 ceteris crassiores fere ad apicem ascendentes saepius etiam 2 tenuiores marginales emittente, lateralibus supra laminam mediam 3–4-jugis curvatis; petiolis gracillimis inaequilongis. *Panicula* axillaris, ramis paucis umbellatis, umbellis 4–5-floris, floribus subglobosis pedicellis gracillimis. *Calycis* tubus subglobosus limbus angustatus margine minute 5-dentatus. *Fructus* sphaericus stylis brevibus basi connatis apice recurvis coronatus.

In montibus Daphla nuncupatis, apud Torupati, 5,500 p. s. m., *J. L. Lister !*

Arbuscula 20-pedalis. *Foliorum* laminis 3·5–8 poll. longis, his 1·65–4 poll. latis; petiolis 1·5–7 poll. longis. *Flores* ·15 poll. diam., pedicellis ·3 poll. longis. *Fructus* ·2 poll. diam.

This very distinct *Dendropanax* was collected by Mr. J. L. Lister, in whose honour it is named, when accompanying the Daphla Hill expedition of 1874.

CORNACEAE.

18. Alangium Kingianum *Prain;* frutex scandens, inermis, novellis puberulis; *folia* membranacea, oblongo-ovata, basi truncato-cuneata, apice rotundato demum breviter acuminata utrinque nervis puberulis ceterum puncticulata, basi sub-trinervia nervo mediano robustiore nervos ascendentes 5–6-jugos emittente; *flores* in cymis laxis axillaribus foliis multo brevioribus dispositi, pedunculis pedicellisque puberulis; *calyce* dense puberulo breviter 7-dentato, *petalis* lutescentibus extus puberulis saepissime 7, anguste linearibus apice subacutis; *staminibus* 14, filamentis brevissimis pubescentibus, antheris linearibus; *drupis* parcissime adpresse puberulis, parum compressis, longitudinaliter 14-decim lineatis basi roundatis apice subacutis.

In montibus Kachin nuncupatis, apud Agata Kedan, etc., *Kingii mercenar. !*

Folia 4–6 poll. longa, 1·5–2·5 poll. lata, petiolis ·25 poll. longis.

Cymarum pedunculis ·5–·75 poll., cymis 1 poll. latis 8–12-floris, pedicellis ·25 poll. longis. *Flores* ·3 poll. tantum longis. *Drupae* ·4 poll. longae, ·25 poll. latae.

A very distinct species not before represented in Herb. Calcutta or in Herb. Kew; the affinity, Dr. Stapf has been kind enough to note at Kew, is with *Alangium Faberi* Oliv., a species not present at Calcutta.

19. Mastixia euonymoides *Prain;* arbor, *foliis* oppositis longiuscule petiolatis, laminis ovatis apice acuminatis basi cuneatis, margine integris, crasse coriaceis, supra intense viridibus subtus prasinis, utrinque glaberrimis, nervis 6–8-jugis subtus distinctioribus parum ascendentibus; *thyrsus* laxus dichotomus, pedunculo ramisque glabris; *flores* ignoti; *fructus* anguste ellipsoideus.

In montibus Kachin; *Kingii mercenar. !*

Folia petiolis ·75 poll. longis, laminis 4 poll. longis, 1·75–2 poll. latis; pedunculis 2·5 poll. longis, thyrsis 2–2·5 poll. latis; *fructus* calycis limbo 4-dentato coronatus, ·6 poll. longus, ·3 poll. crassus.

A very distinct species.

RUBIACEÆ.

20. Ophiorrhiza Lawranceana *King & Prain;* caulis brevis basi radicans adscendens vel 0; *folia* elliptico-oblonga, apice acuta basi cuneata, petiolis brevibus parce puberulis, laminis nervis subtus parce puberulis, ceterum utrinque glaberrimis, stipulis e basi trianguli filiformibus, *cymae* longe pedunculatae congestae glabrae, bracteolis spatulatis obtusis glabris persistentibus, *calycis* dentibus brevibus triangulis, *corolla* brevis tubo cylindrico, limbo angustato; *capsula* glabra.

In montibus Kachin nuncupatis, *Kingii mercenar.!*

Folia 1·25–3·5 poll. longa, ·75–1·5 poll. lata, lurida. *Cymae* ·3–·5 poll. latae, pedunculis gracilibus 3 poll. longis. *Corolla* ·2 poll. longa, tubo angustato.

Very similar to *O. lurida* Hook. fil. from the Eastern Himalaya in size and habit, and no doubt related to that species. The bracts are however different and the corollas are smaller and much narrower.

21. Paederia Cruddasiana *Prain;* volubilis corolla excepta omnino glaberrima; *folia* opposita petiolata ovata basi truncata apice acuta; *flores* congeste cymosi in paniculis axillaribus terminalibusque laxis paribus distantibus dispositi; *calycis* dentibus 5 brevibus triangulis, tubo campanuluto, bracteolis subulatis; *corolla* extus puberula tubularis, intus dense tomentosa; *fructus* oviformis calycis dentibus coronata.

In montibus Kachin nuncupatis, *Kingii mercenar. !*

Folia 2–5 poll. longa, 1–2·5 poll. lata, petiolis 1–1·25 poll. longis; *paniculae* 4–8 poll. longae, ramis ·5–1·5 poll. longis, cymis

singulis terminalibus ·5–·75 poll. latis. *Corolla* ·5 poll. longa. *Fructus* ·25 poll. longus, ·3 poll. latus.

This very distinct species belongs to the group characterised by having the fruits uncompressed and differs very markedly from the other species of that group in having the fruits egg-shaped, narrowed upwards from the middle, and not subglobose rounded at the top as in *P. tomentosa*. From *P. linearis*, the other Indian species referred to the group, it differs much in foliage—its general facies, except for the fruit, being very much that of the common *P. foetida*.

VACCINIACEÆ.

22. Agapetes Pottingeri *Prain*; frutex epiphytica, ramis adpresse puberulis et pilis rigide setaceis patentibus ferrugineis simulac obsitis. *Folia* sessilia ovato-lanceolata a basi fere rotundata sensim ad apicem longius acuminatam attenuata, margine integra, coriacea, utrinque glabra, nervis 8–10-jugis supra distinctioribus. *Inflorescentia* corymbosa ramiflora pedunculo pubescenti bracteis rigidis cincto, pedicellis gracilibus pubescentibus basi bracteatis, bracteis majusculis ovato-lanceolatis rigidis striato-reticulatis margine puberulo excepto glabris. *Calycis* tubo globoso cum apice pedicelli parum ampliati articulato extus pilis longis fulvis setaceis apice glandulosis patentibus obsito, limbo campanulato margine 5-dentato prorsus reticulato, dentibus triangulis quam partem limbi connatam brevioribus, intus glabro extus pilis flaccidis longis sparse pubescente. *Corolla* tubulosa recta medio parum ampliato sub limbo breviter 5-lobo lobis late triangulis subobtusis parum contracta, extus parce pilis flaccidis pubescente, lobis viridibus ceterum rubris nec lineis notatis. *Stamina* 10, epigyna, libera, filamentis antheras fere aequantibus, antherisque glabris; antherarum tubulis corallae limbum vix attingentibus, dorso 2-calcaratis. *Ovarium* 5-loculare stylo filiformi apice brevissime 5-lobulato ovulis numerosis.

In montibus Kachin nuncupatis, 4100 p. s. m., *Pottinger!*

Folia 5–7 poll. longa, 1·5–2·25 poll. lata. *Corymbis* paucifloris 1·5 poll. longis, pedunculis ·2 poll., pedicellis ·5 poll. longis, bracteis ·2–·25 poll. longis. *Calycis* tubo ·1 poll., limbo ·35 poll. longo, dentibus ·15 poll. longis. *Corolla* ·65 poll. longa.

This remarkably distinct species is separable from all hitherto described *Agapetes* by its large bracts and its large calyx-limb, the teeth of which are not partite to the disk as in our other species. It may be taken therefore as the type of a distinct section (§ *Holocalyx*) to be distinguished as follows from the other sections defined in the *Genera Plantarum* ii. 571:—

§ Holocalyx. Corolla elongata recta parum ventricosa breviter

5-fida lobis erectis. Stamina recta antherae dorso calcaratae. *Bracteae majusculae, calycis limbus in dentibus 5 prorsus haud solutus.*

DESMOGYNE King & Prain.

Calycis tubus teres pedicelli apice ampliato crateriformi involutus subglobosus; limbus magnopere ampliatus late campanulatus, margine integer, persistens. *Corolla* tubulosa anguste infundibularis, elongata, tubo terete recto breve 5-lobo, lobis erectis. *Stamina* 10, epigyna, corolla aequilonga filamentis glabris basi inter se et a tubo corollae liberis; antherae elongatae rectae liberae dorso muticae tubulis connatis tenuibus strictis membranaceis, loculis extus muriculatis. *Ovarium* 5-loculare; stylus filiformis stigmate lobulato; ovula in loculis singulis numerosa placentis angulo interiori adnatis.—Frutices epiphytici, foliis alternis persistentibus breviter petiolatis coriaceis integris. Species singula, montium Indiae transgangeticae incola.

23. Desmogyne neriifolia *King & Prain;* frutex epiphytica, ramis glabris gracilioribus. *Folia* alterna oblongo-lanceolata apice longe caudato-acuminata basi rotundata breve petiolata margine integra, crasse coriacea nervis mediano subtus prominente supra impresso excepto obscuris. *Inflorescentia* corymbosa pedicellis versus apicem pedunculi sursum incrassati in axillis bractearum triangularum approximatis; pedicellis sursum incrassatis apice cupularibus. *Calycis* tubus globosus in fundo epicalycis articulatus eoque involutus, limbus inflatus late campanulatus margine integer prorsus prominenter reticulatus. *Corolla* elongata recta infundibuliformis 5-loba, lobis brevibus triangularibus. *Stamina* 10, epigyna libera filamentis brevibus antheris elongatis erectis apicibus corollae limbum attingentibus, dorso muticis. *Ovarium* 5-loculare, stylo filiformi apice breviter 5-lobulato; ovulis numerosis. *Fructus* ovatus calycis limbo persistente coronatus.

Burma: in montibus Chin etiam in montibus Kachin, *Kingii mercenar. !*

Folia 4–6 poll. longa ·7–·9 poll. lata; petiolis ·2 poll. *Pedunculi* axillares ad 2·5 poll. usque longi, bracteis triangulis ·1 poll. longis, pedicellis 1·2 poll.; *calycis* tubo ·15 poll. longo, limbo ·3 poll. longo latoque. *Corollae* tubo 1·5 poll. longo, limbo ·5 poll. diam., lobis ·2 poll. longis. *Fructus* ·4 poll. longus, ·35 poll. diam.

A very distinct species of the group of *Vacciniaceae* that constitutes the "genera" *Agapetes* G. Don., and *Pentapterygium* Klotzsch. From all *Pentapterygia* it differs in having the calyx neither winged nor ridged and while agreeing with *Agapetes* in having a smooth calyx tube it differs from all the known species of that genus in having the calyx-limb large, entire and widely campanulate, and, further,

in having the calyx-tube enveloped by the expanded cupular apex of the pedicel. With reference to this last character the name *Desmogyne* (δεσμός, a bandage; γυνή) has been applied to the plant. We feel inclined to think that *Agapetes* and *Pentapterygium*, which are distinguished solely by the absence from the former, the presence in the latter, of ribs or wings to the calyx, are hardly separable as genera. If these two could be united our plant would then be the type of a section *Desmogyne* within this enlarged *Agapetes*. But seeing that in the three most authoritative treatises on the genera of plants—the *Genera Plantarum*, the *Histoire des Plantes*, and the *Natürlichen Pflanzenfamilien*,—Messrs Bentham and Hooker, Baillon, and Drude have considered it necessary to keep *Pentapterygium* apart from *Agapetes*, we are constrained to give our *Desmogyne*, at least for the present, the rank of a genus; it differs more markedly from either *Agapetes* or *Pentapterygium*, than these two differ from each other. The undivided calyx-limb, at first sight a more remarkable feature than the ball and socket arrangement at the apex of the pedicel is not really so important a difference as it appears; the species immediately preceding this (*Agapetes Pottingeri* Prain) stands intermediate as regards calyx-limb between this and the other *Agapetes* since the limb though 5-lobed at the margin is there also campanulate and gamophyllus below.

Dr. Stapf who has examined and kindly compared one of our specimens at Kew agrees with us in thinking that so long as *Pentapterygium* is kept apart from *Agapetes* our plant had better receive generic rank. If *Pentapterygium* could only be reduced to *Agapetes* the present species would probably have to be included in this enlarged genus as *Agapetes Desmogyne* King & Prain.

PRIMULACEÆ.

24. Lysimachia evalvis *Wall.* in *Roxb. Flor. Ind.* ed. *Carey & Wall.* ii. 27 var. grandifolia *Prain*; *folia* 6 poll. longa, 2·25 poll. lata; *pedunculi* 2 poll. longi.

In montibus Kachin, apud Neochawng 2,500 p. s. m., *Pottinger!*

This may prove, when more completely represented, to be a distinct species.

SOLANACEÆ.

25. Solanum ferox *Linn. Sp. Pl.* ed. ii. 267 var. inermis *Prain*; omnino nisi aculeis absentibus cum *S. feroce* convenit.

In montibus Kachin nuncupatis, *Kingii mercenar.!*

The collector's note is "Moima villge; flowers white." There is not a character whereby the plant can be separated from *S. ferox* except

the complete absence of any trace of prickles whether on leaves or stems, and in the less numerous needle-like hairs on the fruits.

It is well-known that many forms of *S. Melongena* under cultivation entirely lose their armature; it is interesting to find that the same may apparently happen with a wild species like *S. ferox* when growing as a weed in the rich soil that characterises the vicinity of an Indian hill-village.

GESNERACEÆ.

26. AESCHYNANTHUS GRANDIFLORA *Spreng. Syst. Veg.* iv. 238 VAR. longiflora *Prain*; floribus 2·25 poll. longis, ceterum typi.

In montibus KACHIN, *Kingii mercenar.!*

27. AESCHYNANTHUS MICRANTHA *Clarke* in *Flor. Brit. Ind.* iv. 340 VAR. Pottingeri *Prain*; capsulis 10-pollicaribus, ceterum omnino typi.

In montibus KACHIN, *Kingii mercenar.!*

Quite possibly both these *Aeschynanthi*—of which the first is only reported in flower, the second only in fruit—may prove when fully represented to deserve specific rank.

28. AESCHYNANTHUS PUSILLA *Prain*; rami elongati gracillimi, sparse pilosi, nodibus prorsus radicantes, *foliis* ternatis parvis ovatis apice acutis, basi cuneatis, ·3 poll. longis ·2 poll. latis utrinque pilis albidis multicellularibus villosis, nervis obscuris, margine integris petiolis distinctis (·15 poll. longis), villosis; *floribus* paucis terminalibus et in axillis superioribus, ad nodos singulis, pedicellis gracilibus, ·2 poll. longis, dense pilosis; *calyce* 5-partito, segmentis lanceolatis tuboque anguste campanulato pilis patentibus dense villosis; *corolla* extus parce puberula, pallide flava limbum versus viridescente, lobis ipsis intus tantum purpurascentibus, tubo 1 poll. longo dimidio inferiore peranguste cylindrico, dimidio superiore anguste infundibuliformi, limbo ·2 poll. lato; filamentis inclusis filiformibus glabris; *capsula* adhuc ignota.

In montibus KACHIN nuncupatis; *Kingii mercenar.!*

This graceful little species may be tentatively referred to the section *Haplotrichium*, its general facies indicating that it is probably closely allied to *Aeschynathus gracilis;* till fruiting specimens are obtained, however, its precise position must remain problemetical.

29. DIDYMOCARPUS ELATIOR *Prain*; suffrutescens; rami juniores pilis divergentibus rufescentes demum glabrati; *folia* ovato-lanceolata basi cuneata apice acuminata margine minute serrata, petiolata, petiolis rufo-pubescentibus, laminis supra parce adpresse puberulis subtus praesertim nervis pubescentibus: *cymae* pauciflorae axillares pedunculis gracilibus elongatis puberulis; bracteae lanceolatae; pedicelli calyce

parum longiores saepius singuli; *calyx* campanulatus ad medium usque fissus dentibus ovato-acutis tubum aequantibus; *corolla* tubulosa fere recta extus parcissime puberula, subsymmetrica, pallide purpurea; *capsula* in pedicello erecta.

In montibus KACHIN, apud Sim, 5,000 p. s. m., prope rivulis; *Kingii mercenar.!*

Foliorum laminis 3 poll. longis, 1·25–1·5 poll. latis, petiolis ·75 poll. longis; pedunculis 1·5 poll. longis saepius 3-floris, nonnunquam (floribus lateralibus geminis) 5-floris; pedicellis ·4 poll. longis; *calyce* ·25 poll. longo; *corolla* 1·2 poll. longa; *capsula* 1–1·25 poll. longa ·15 poll. lata.

A very distinct species, in habit most resembling *D. corchorifolia* Wall., from Penang and Malacca.

ACANTHACEÆ.

30. RHINACANTHUS CALCARATUS *Nees* in *Wall. Pl. As. Rar.* iii. 109 VAR. maxima *Prain*; *foliis* utrinque parcissime puberulis, panicula condensata; *corollae* tubo 1·5 poll. longo; *capsula* 2 poll. longa.

In montibus KACHIN, *Kingii mercenar.!*

This will probably have to be considered a distinct species, *Rhinacanthus maximus*, when full material of the original species is obtained; as yet the fruit of Nees' plant has not been collected. The present plant has leaves that are exactly like those of the type in size and texture; they only differ in being faintly puberulous on both sides, those of Nees' plant being glabrous; its calyx and corolla are exactly like those of Wallich's *Pl. As. Rar.* t. 113 except that they are distinctly larger.

HAEMODORACEÆ.

31. OPHIOPOGON CORDYLINOIDES *Prain*; caule rigide erectiusculo, crasso, nodis nec radicante, vaginibus ovatis viridibus margine late scariosis mox deciduis suffulto, *foliis* late lanceolatis acuminatis 15–17-nervis, petiolis angustis brevibus basi vaginis scariosis expansis, *scapis* quam folia fere dimidio brevioribus, bracteis scariosis, pedicellis vix longioribus, *floribus* fasciculatis, albidis, quam pedicellos brevioribus, segmentis ovato-oblongis, antheris lanceolatis filamentis brevissimis, stylo filiformi; *fructu* orbiculari.

In montibus KACHIN, apud Namli, 2000 p. s. m., *Pottinger! Kingii mercenar.!*

Caulis penna cygni crassus, foliis 8–12 poll. longis, ·75–1 poll. latis, petiolis vix 1 poll. longis. *Racemi* 3–4 poll. longi, bracteis ·3 poll. longis, pedicellis 25 poll. longis, *perianthio* ·2 poll. longo, ·3 poll. lato; *fructu* ·2 poll. diam.

A very distinct species with an elongated stem as in *C. dracaenoides*, but without roots at the nodes whence arise the tufts of leaves; the vaginal sheaths are exactly as in *C. dracaenoides* but the leaves proper are longer and narrower and have shorter petioles. The flowers are much as in *C. dracaenoides* but are slightly smaller; the fruits are considerably smaller.

LILIACEÆ.

32. Disporum pullum *Salisb. Trans. Hort. Soc.* i. 330. var. oblanceolata *Prain*; *foliis* oblanceolatis, acuminatis, 8 poll. longis 2·5 poll. latis, fasciculis circa 15-floris, pedicellis 1·25 poll. longis, *fructibus* ovatis subacutis ·2 poll. longis.

In montibus Kachin, apud Lammuk, *Pottinger!*

This is unfortunately only represented by one specimen which is without flowers. It is obviously most nearly related to *D. pullum* of which it is for the moment treated as a variety, though there is hardly room for doubt that when more fully represented it must be considered a distinct species.

COMMELYNACEÆ.

33. Streptolirion volubile *Edgew. Trans. Linn. Soc.* 90 t. 2. var. setosa *Prain;* caulibus, petiolis, foliorum marginibus, pedicellis, bractearumque marginibus, pilis fuscis rigidioribus densius setosis; ceterum typi.

In montibus Kachin; *Kingii mercenar.!*

The setose stems, petioles and leaf margins give this plant a very distinctive facies, but it cannot be separated by any other character from typical *S. volubile*, which is likewise sent by the same collector from the Kachin Hills, and it will probably be found unnecessary to accord this more than varietal rank.

AROIDEÆ.

34. Typhonium inopinatum *Prain; foliorum* petiolis quam lamina triplo longioribus; lamina ovata apice acuta base sinu latiore cordata; *pedunculo* petioli partem vaginalem fere aequante; *spathae* tubo suborbiculari quam lamina prorsus suberecta sensim acuminata sexties breviore; tubo utrinque viridi, limbo viridi extus basi lineatim obscure purpurascente intus basi lineis sursum maculis purpureis notato; *inflorescentia* foeminea fertili quam mascula multo breviore, pistillodiis perpaucis simplicibus vel bifurcatis parum recurvis; spadicis appendice tereti anguste conoidea vix stipitata reliquam spadicis partem parum excedente.

In Burma superiore prope Myitkyina, *Kingii mercenar.!*

Foliorum petioli 1·5–2 dm., pars vaginalis 4–5 cm., lamina aeque 8 cm. longa lataque, sinu aeque 2 cm. lato altoque. *Pedunculus* 4–5 cm. longus, spathae tubus 2 cm. longus, 1·5 cm. latus, limbus 9–10 cm. longus, triente imo 4·5 cm. latus apice subacutus. *Inflorescentia* mascula cylindrica pallidiflora 1 cm. longa ·45 cm. lata, antherarum thecae rimis porosis apertae; pars foeminea pallide punicea ·2 cm. longa ·5 cm. lata, pistillodiis basi purpureis medio albis apice viridescentibus explanatis ·5 cm. longis. Inflorescentia tota 8 cm. longa, parte sterili 5 cm. longa. *Fructus* baccatus viridis pallide rubro-suffusus, ovalis, ·5 cm. longus, ·4 cm. diam.

This interesting species was first noticed in Oct. 1895, in one of the flower-beds in the Royal Botanic Garden, in which it had appeared spontaneously. A drawing was made and sent with specimens to Kew, where it was examined by Mr. N. E. Brown, of the Kew staff, a very able student of *Aroideæ*; Mr. Brown agreed with us in thinking it new. No light could be thrown, at the time of its first being noticed, on its original habitat, though its introduction had apparently not been recent, seeing that it was subsequently found, when looked for, in almost every part of the Botanic Garden. The communication of specimens from Myitkyina in Northern Burma seems at last to definitely settle the original source of the species. It is noteworthy that the commonest of the *Typhonia* in and around the Royal Botanic Garden, *Typhonium trilobatum* Schott (Arum trilobatum *Linn.* = Arum orixense *Roxb.*), is evidently a plant introduced here during or since Roxburgh's incumbency as Superintendent (1793–1815). Roxburgh did not collect it in Bengal and we have been unable to find it in Bengal ourselves, or to learn that any one has found it in Bengal except in the immediate neighbourhood of these Gardens — where it is scarce, and inside them — where it is abundant. Next most common in these Gardens is *T. inopinatum*, the species just described, while fairly plentiful but less common than either is a species that during Roxburgh's superintendentship was accidentally introduced from the Moluccas, and that he has described as *Arum trilobatum* in *Flora Indica*, iii. 505, but that is not the *Arum trilobatum* of Linnaeus, *Sp. Pl.* ed. princeps, though it was included by Linnaeus with the true *T. trilobatum* in his *Systema* ed. x. and his *Sp. Pl.* ed. ii. The true *Typhonium trilobatum* is based on a figure by Hermann (*Par. Bat.*) of the Ceylon "Panuala" which Thwaites, Trimen and others identify with *Arum orixense* Roxb. whereas Roxburgh's plant is the same as Rumphius' *Arisarum amboinicum* (*Herb. Amboin.* V. t. 110, f. 2). It is usual to give the name *Typhorium Roxburghii* to Roxburgh's plant, on the authority of Schott, but there is a slight objection to this in the fact that Schott gives a figure of the plant which he names *T. Roxburghii*

and which he takes to be Roxburgh's one, but which differs altogether from Roxburgh's in habit, in length of peduncle (twice instead of half as long as vaginal portion of leaf-stalk), size of spathe, nature of pistollodes, distance between male and female portions of inflorescence and space between male inflorescence and barren appendix. This misidentification is the more inexplicable since Roxburgh has left a very accurate coloured drawing of the plant intended by him, a drawing that has been copied by Wight as his *Ic.* t. 803, and since Schott himself expresses a doubt whether the plant which he figures as *T. Roxburghii* be the same as the *Arisarum amboinicum* Rumph. V., t. 100 f. 2, with which Roxburgh identified his plant. The coloration of the plant figured by Saunders (*Ref. Bot.* t. 283) closely approximates to the true Roxburghian plant, but the tip of the spathe does not twist as in *T. Roxburghii*, the plant which Roxburgh figures. The tip of the spathe does not twist in the figure given by Rumphius though the account given of the colour in the *Herb. Amboinense* agrees well enough, and for the matter of that, the tip does not always twist in the plant as it grows; the chief objection to Rumphius' plant being ours is that its peduncle is much too long. What makes matters more complicated is that we have yet another species of *Typhonium* which grows, as if wild, in the Royal Botanic Garden, and which has all the characters of the plant that Schott figures. This species, for the writer is inclined to treat it as a distinct plant, has a white barren appendix in place of the bright red or terracotta coloured appendices of *T. trilobatum* and *T. inopinatum* or the dark purple very long and slender appendix of Roxburgh's plant from the Moluccas. Perhaps the simplest solution of the tangle is to quote the Moluccas plant as *Typhonium Roxburghii* Schott (as to citation *T. trilobatum* Roxb.) *Aroid.* i. 12 (excl. t. 17), *Prodr.* 106 (*in part*); Saunders, *Ref. Bot.* t. 283 = *Arum trilobatum* Roxb. *Flor. Ind.* iii. 505; Wight, *Ic.* t. 803; and to cite the hitherto unnamed and undescribed Botanic Garden species which Schott has figured, as a new species, *Typhonium Schottii* Prain = *T. Roxburghii* Schott *Aroid.* t. 17 (excl. descript.). A reference to the original works will show that in his *Prodromus*, Schott describes the coloration of *T. Roxburghii* in terms that are only applicable to Roxburgh's Moluccan plant, and says that the description is based on dried specimens and drawings; in his *Aroideæ*, Schott does not venture to describe colours and it may be safely assumed from this that both the description and the drawing are from dried specimens only. Even if in both instances the description may be held to include Roxburgh's plant, yet the drawing is certainly that of another species. As yet we have been unable to find where *T. Schottii* is really wild. The only truly wild and uninitroduced species in Lower Bengal is

T. cuspidatum Bl., and curiously enough this happens to be much the rarest of the five that are to be found within the limits of the Gardens. We have been unable to find it noted that the otherwise excellent figure which Blume gives of *T. cuspidatum* makes the curious mistake of reversing the position of the lower pistillodia. These are cymbiform organs with the concavity directed upwards in the natural state; in Blume's figure the concavity is made to look downwards.

Before leaving this subject it may be pointed out that though Roxburgh has cited Loureiro's *Arum trilobatum* as equivalent to his *A. orixense*, this is by no means clearly the case. The pistillodia of *A. orixense* (the true *A. trilobatum*) are, as Roxburgh describes them, yellow; those of *A. trilobatum* Loureiro, are described, on the other hand, as red. The truth is that the genus *Typhonium* requires more careful and extended study, from living plants, than it has yet received.

35. Typhonium Listeri *Prain; foliorum* petiolis quam lamina dimidio longioribus; lamina pedatisecta 5-foliolata, segmentis mediano sessili reliquis per paria breve petiolulatis omnibus anguste ovatis basi cuneatis apice sensim acuminatis; *pedunculo* purpureo brevissimo bracteis cataphyllariis obtecto; spathae tubo subcylindrico quam spatha subito refracta quadruplo breviore; tubo extus laete viridi intus lutescenti, limbo extus margine purpurea excepta laete viridi intus purpurascente; *inflorescentia* foeminea fertili quam mascula parum tantum breviore, pistillodiis paucioribus majusculis ligulatis deflexis purpureis; spadicis appendice tereti parum stipitata basi plus minus obliqua concolore lactea, abrupte refracta et spathae limbo involuta reliquam spadicis partem triplo longiore.

In prov. Chittagong; *Lister!* in Assam; *Watt!*

Foliorum petioli 2·5–3 dm. longi, pars vaginalis 1·5 cm., cataphyllis spathaceis 3–7 cm. longis; laminae segmentis 1·4 dm. longis, 6 cm. latis. *Pedunculus* vix 1 cm. longus, spathae tubus 4 cm. longus, 2 cm. latus, limbus angulo angulum rectum parum excedente refractus 1·4 dm. longus, 7 cm. latus apice acutus. *Inflorescentia* mascula cylindrica 1·7 cm. longa, ·9 cm. lata, pars foeminea conica 1 cm. longa, basi 1·5 cm. lata; parte sterili 1·2 dm. longa, 1·2 cm. lata.

A very distinct species.

36. Typhonium Pottingeri *Prain; foliorum* petiolis quam lamina duplo longioribus, lamina profunde tripartita partitionibus subaequilongis intermedia oblongo-elliptica acuta, lateralibus oblongo-lanceolatis, lobo triplo breviore oblongo-obtuso subretuso auctis; *pedunculo* quam petioli pars vaginalis duplo breviore; spathae tubo ovato vel oblongo quam lamina imo tertio ovata erecta sursum recurva et sensim longe acuminato-caudata octies breviore; tubo extus viridi intus rubescente,

limbo basi tantum intus rubescente supra puniceo-maculata extus concolore pallide viridi; *inflorescentia* foeminea fertili quam mascula multo breviore, pistillodiis numerosissimis varie flexis; spadicis appendice tereti anguste conoidea breviter stipitata reliquam spadicis partem magnopere excedente.

In montibus KACHIN, prope Myitkyina, *Kingii mercenar.!*

Foliorum petioli 2–2·5 dm., pars vaginalis 2·5–3 cm., laminae partitiones ·8–1·2 dm. longae ·75–1 dm. latae, lobi lateralium basales 4–6 cm. longi, 3–4 cm. lati. *Pedunculus* 1–1·5 cm. longus; spathae tubus 3 cm. longus, 2·5 cm. latus limbi pars triens inferior 7 cm. longa, 9 cm. lata pars summa caudata reflexa basi 3·5 cm. lata, 1·4 dm. longa, sensim apice longe acuminata attenuata. *Inflorescentia* mascula cylindrica rubra 1 cm. longa ·7 cm. lata antherarum thecae rimis porosis apertae; pars foeminea alba ·5 cm. longa, ·85 cm. lata, pistillodiis albis explanatis 1·2–1·5 cm. longis. *Inflorescentia* tota 4 dm. longa, appendice sterili 16 dm. longa.

In addition to the forgoing *Aroideæ*, an undescribed *Amorphophallus*, which has been included in a *List of Kachin Plants*, published in the *Records of the Botanical Survey of India* as *A. Cruddasianus*, should be here alluded to. Complete material has been sent by our Garden Collector, but for the moment we prefer to withhold a detailed description till living flowers are available, when an accurate account of the coloration can be given. Our collector has sent also a number of living tubers, but during the past season these have sent up leaves only. The tubers alone, however, furnish characters that are sufficiently diagnostic; in place of being oval or depressed, as in other *Amorphophalli* hitherto described, these in *A. Cruddasianus* are long and parsnip-shaped, 6–10 in. long, 2–3 in. across the top.

New species of Entada *from Singapore and Borneo.—By* H. N. RIDLEY, ESQ., M.A., F.L.S., *Director, Botanic Gardens, Singapore. Communicated by* SURGEON-MAJOR D. PRAIN.

The genus *Entada* is represented in the Malay Peninsula by the well-known *E. pursaetha*, and a species very common in Singapore which seems to have been entirely overlooked, although it is very conspicuous here from its very remarkable fruit. To this plant I propose to give the name *Entada spiralis*.

E. SPIRALIS, n. sp. A woody climber with twisted somewhat flattened spiral stems about 3 in. wide and 1–2 in. thick in the thickest part in large specimens; thinner on the outer edge of the curve *Leaves* alternate three inches long (excluding the tendril), petiole one

inch, much swollen at the base, pinnæ four alternate with petiolules one inch long swollen at base, leaflets alternate rarely opposite, somewhat distant, with very short stalks elliptic to obovate-oblong retuse inaequilateral, 2 to 3 in. long, 1 in. or less wide, dark green unpolished above, glaucous beneath, tendril long, bifid at the apex. *Flower-spikes* axillary 6 in. long, peduncle 2 in. long, swollen at base, rachis purplish-brown covered with short stiff hairs. *Bracts* minute lanceolate hairy. *Flowers* copious densely crowded, shortly pedicellate. *Calyx* campanulate with five teeth, hairy, green. *Corolla*-lobes 4 or 5, oblong obtuse glabrous green, 2 mm. long. *Stamens* 8 to 10, at first white soon becoming yellow, filaments $\frac{1}{4}$ inch long filiform; anthers globose terminal. *Ovary* cylindrical oblong; *style* about as long as the stamens, stigma concave.

The pods are crowded together, three or four being produced on a peduncle. They are contorted into a spiral all coiled together, with five to eleven seeds in each pod. The margins are undulate, and not thickened, and the walls are not woody and remain always green. When ripe the pod breaks up into joints which as they fall dehisce.

The seeds vary much in size; they are obscurely triangular in outline or heart-shaped. The larger ones are about two inches long and broad and an inch thick. The testa is chocolate-brown, dull and less woody than in *E. scandens*. The plant is very abundant in Singapore and I have also seen it in Province Wellesley. It usually grows in loose scrub on the edges of woods, or among secondary growth. It constantly throws up shoots from the roots, and is a troublesome plant to eradicate. The shoots are of a purple black colour. The flower-spikes are usually produced immediately after the fall of the leaves, in December or January, but by the time the flowers are open the plant is clad again in leaves. The period of flowering, however, is rather irregular and flowers may often be met with at other seasons. The flowers are fertilized by *Diptera*, chiefly *Syrphidæ*. A good proportion of them possess no pistil, but are entirely male. The seed is dispersed chiefly by monkeys which eat portions of the pods, and throw the seeds about.

The plant is called Akar Beluru by the Malays, as is also *E. Pursaetha* DC.

E. PURSAETHA, DC. described by Dr. Prain (J. A. S. B. lxvi. 2. 242) under the name of *E. scandens* Benth. is a much less common plant in the Malay Peninsula. I have only met with it in Pahang. The plant described and figured by Scheffer under the name *Entada Rumphii* (Nat. Tijds. Ned. Ind. xxxii. t. xvii. xviii. B) seems to me to differ in the form of the pod only. The foliage of *E. Pursaetha* seems to vary very much as does that of *E. spiralis*, and were it not for the fruit I should

certainly refer the plant from Pahang to *E. Rumphii* as the fewer large leaflets quite resemble those of Scheffer's figure; the pod, however, exactly resembles one from the Andamans collected by Dr. Prain and is also exactly like the figure of *E. Pursaetha* given by Scheffer.

In examining specimens of *E. Pursaetha* in the Herbarium of the Botanic Gardens, Singapore, and those lent me kindly by Dr. Prain, I note a form in which the rachis of the inflorescence and the petiole and midrib of the leaf are covered with a rather conspicuous tomentum, reddish in the dry specimen, while the rachis in the other forms is much more glabrous, though by no means completely so. These specimens were collected in the Chittagong Hill Tracts (*Lister* 175), Manipur (*Watt* 6726), Silhet (*Wallich*), and Sikkim (*Thomson*), and probably represent a local form. However, I have seen no fruit.

The species from the Indian region and Malay Peninsula then are *E. Pursaetha* DC, and *E. spiralis* n. sp. Further east we get *E. Rumphii* Scheff. distinguished by its straight pod with oblong not rounded joints, with a straight and not indented thickened margin, oblong seeds, and thinner endocarp. I have also an evidently distinct species collected by Dr. Haviland in Sarawak on two occasions of which I have seen no fruit, which I will describe under the name of *E. borneensis*.

E. BORNEENSIS, n. sp. *Leaves* 4 in. long, with 6–7 pairs of leaflets opposite or in the lower part of the leaf, alternate, oblong retuse, slightly oblique, coriaceous dark shining above, when dry glaucous beneath, petiole $\frac{1}{8}$th in. long, pubescent, midrib on both sides of the leaf pubescent, 1 in. long, and $\frac{5}{8}$ths in. wide; tendrils two on each leaf.

Inflorescence, one foot to one foot and a half long covered with closely appressed pubescence. *Flowers* densely crowded, much smaller than in the other species. *Calyx* cupulate with very short teeth, pubescent. *Corolla* 5-lobed, lobes lanceolate acute. *Stamens* ten, filaments as in *E. Pursaetha*; anthers oblong. *Pistil* very rudimentary; female flowers and fruit not seen. Borneo, Sarawak, at Penkulu Ampat (374), Saribas (1563, Haviland).

This species is certainly most nearly allied to *E. spiralis* in its opposite leaflets glaucous beneath, but is very distinct in having from six to seven pairs, smaller, and pubescent on both sides of the midrib, in the very much longer spikes of flowers which are not more than half the size of those of *E. Pursaetha* or *E. spiralis* and the flower spikes being unisexual. Dr. Haviland notes also that all the specimens are male. The corolla in this species opens out quite flat starwise, not merely reflexing its petals as in the other kinds, which gives it a very different appearance. It is to be hoped that further explorations in Sarawak will produce female flowers and fruit.

On a small collection of Butterflies from Buru in the Moluccas.—*By* Lionel de Nicéville, F.E.S., C.M.Z.S., &c.

[Received 25th June; Read 3rd August, 1898.]

As far as I am aware, no list has been published on the butterflies of Buru. As local and in especial insular lists of fauna are of particular interest for distributional and other reasons, I have thought it advisable to prepare the list given below. The material on which it is based is small, and consists of but few examples of each species. It is not known to me into whose hands the bulk of the collection has fallen. The specimens were collected early in 1897 (he visited the island a few years previously) by Mr. William Doherty, aided by native (Indian) collectors, and are labelled as from Kayeli. This place is marked Kajeli in my Dutch maps, and lies to the north-east of the island, and there is a district, fort, and deep bay of this name. In English the fort is sometimes written Cayeli. The island of Buru (Boeroe in Dutch, Bouru in German, Bourou in French) is one of the largest of the Moluccas or true Spice Islands, and it lies a little south of the equator, between 3° and 4° S. Lat., and 126°–127·20 E. Long. East of Buru is the large island of Ceram, with the small Amboina or Ambon group of islands to the south-west of Ceram again; west of Buru is the very large island of Celebes. Buru has the Ceram Sea to the north and the Banda Sea to the south. In shape it is a very regular oval with its longer axis lying parallel with the equator, it is about 85 miles in length by 40 in breadth, and has an area of nearly 2,000 square miles. The northern portion of the island produces the plant from which is extracted the far-famed Cayaput or Cajaput-oil; and that curious mammal, the Babirusa, is found in the island as well as in Celebes.

Reference is made below to all such species recorded from Buru of which I have been able to find records. In the entomological portion of 'The Voyage of the Astrolabe' Dr. Boisduval records 23 species from Bourou. Dr. A. R. Wallace in his *Pieridæ* of the Indian and Australian Regions gives 16 species, and in his Notes on Eastern Butterflies records one species of the subfamily *Elymniinæ* and five of the *Nymphalinæ* from Bouru. Those species not seen by me have an asterisk prefixed to their names. The present collection consists of 93 species only, of which I have not seen 29.

Family NYMPHALIDÆ.

Subfamily Danainæ.

1. *Hestia (*Nectaria*) aza, Boisduval.

Bourou (*Boisduval*), Bouru (*Moore*). In my collection from Ternate and Gilolo.

2. *Danais (*Radena*) sobrina, Boisduval.

Bourou (*Boisduval*). Recorded only from the Aru Isles and New Guinea by Moore. I have it from Ternate and New Guinea.

3. Danais (*Radena*) meganira, Godart.

In my collection from Ceram and Amboina.

4. *Danais (*Radena*) juventa, Cramer.

Bourou (*Boisduval*). A doubtful record I think.

5. Danais (*Nasuma*) ismare, Cramer.

In my collection from Amboina.

6. Danais (*Ravadeba*) lutescens, Butler.

Described from Ceram and Bouru by Dr. Butler. Recorded also from Batchian by Moore.

7. *Tellervo assarica, Cramer.

Bourou (*Boisduval* as *Hamadryas assaricus*, sic!).

8. *Euplœa (*Vadebra*) melina, Godart.

Bourou (*Boisduval*). Recorded from Ceram and the Aru Isles by Moore.

9. Euplœa (*Gamatoba*) melancholica, Butler.

Originally described from Bouru and Amboina. My specimens agree very well with Mynheer P. C. T. Snellen's figure of this species in Tijd. voor Ent., vol. xxxii, p. 381, pl. viii, fig. 2, *male* (1889), as *E. melancholica*, var. *æthiops*, Butler, described by Butler as a distinct species from Waigiou. Snellen's specimens were from Roon Island. My Buru specimens are fairly constant, none of them have any spots on the upperside, this feature being characteristic of the var. *æthiops*. Unfortunately Dr. Butler did not figure either species. Mr. Moore keeps them distinct.

10. *Euplœa (*Gamatoba*) alcathoë, Godart.

Bourou (*Boisduval*). Mynheer P. C. T. Snellen in Tijd. voor Ent., vol. xxxv, p. 1, n. 1 (1892), has pointed out that the *E. alcathoë* of Moore is not the same species as the *E. alcathoë* of Godart, the true *E. alcathoë* probably being an older name for *E. melancholica*, Butler. "*Danais*" *alcathoë* was originally described from Amboina.

11. *Euplœa (*Gamatoba*) spiculifera, Moore.

Bouru (*Moore*).

12. Euploea (*Betanga*) duponchelii, Boisduval.

Originally described from Bouru. In my series of specimens from Buru the spots on the underside vary greatly in size and number, one extreme has four spots on the forewing and ten on the hindwing, the other has twenty and thirty-one respectively. I have this species also from Ceram.

13. *Euploea (*Chirosa*) lapeyrousei, Boisduval.

Described from Vanikoro by Boisduval, recorded from Bouru by Moore, who has examined the type specimen in M. Charles Oberthür's collection.

14. Euploea semicirculus, Butler.

Recorded from Bouru, Amboina and Gilolo by Moore. I have only females from Buru. They are very richly shot with purple on the upperside in some lights.

15. *Euploea (*Salpinx*) leucostictos, Gmelin.

Boisduval from Bouru as *E. eunice*, Godart.

16. Euploea (*Salpinx*) bouruana, Moore.

Bouru (*Moore*). A good series of both sexes. As usual the number and size of the spots shews much variation. The male (hitherto undescribed) differs from the female in having the usual secondary sexual characters of the subgenus *Salpinx;* the upperside of the *forewing* has the bowed-out portion of the inner margin paler than the rest of the wing, the bluish-white spot in the submedian interspace is smaller, single and round, in the female it is double; the *hindwing* has the abdominal margin broadly paler than the rest of the wing, the submarginal series of spots greatly reduced in size or absent altogether; on the underside of the *forewing* the spots on the disc are rich violet-blue, as are all the spots on the *hindwing*, in the female these spots are white.

17. *Euploea (*Salpinx*) hisme, Boisduval.

Bouru (*Boisduval*). Mr. Moore records it from the Aru Islands only, while Dr. Boisduval gives it only from Bouru.

18. *Euploea (*Stictoplœa*) watsoni, Moore.

Bouru (*Moore*).

Subfamily Satyrinæ.

19. Mycalesis (*Orsotriæna*) medus, Fabricius.

Hewitson as *Mycalesis hesione*, Cramer, from Bouru. My specimens

have the discal white line across both wings on the underside very narrow, becoming obsolete; all the ocelli well-developed.

20. Mycalesis (*Calysisme*) perseus, Fabricius.

A single quite normal male received, of the wet-season ocellated form.

21. Mycalesis (*Mydosama*) remulia, Cramer.

Bouru (*Hewitson* and *Moore*).

22. Mycalesis (*Mydosama*) sirius, Fabricius.

Described from Amboine, Bourou and Offack by Boisduval as *Satyrus manipa*. Hewitson records it from Bouru as *Mycalesis manipa*. Moore as *Mydosama manipa* from Bouru.

23. Lethe arete, Cramer.

Hewitson as *Debis europa*, Fabricius, var. *arete*, Cramer, from Bourou. Mr. Moore in Lep. Ind., vol. i, pp. 256, 270 (1892) says that *L. arcuata*, Butler, from Celebes, is quite distinct from *L. areta* from Sula and Amboina. My Buru specimens of both sexes have the upperside beautifully glossed with plumbeous coloration, which doubtless quickly fades in cabinet specimens.

24. Ypthima asterope, Klug.

The wet-season form, with well-developed ocelli on the underside, only obtained.

25. Melanitis leda, Linnæus.

Hewitson records this species from Bouru as *Cyllo leda*. I have six males, which are remarkably constant. The upperside of both wings is deep ferruginous, darker on the hindwing; the ochreous band within and anterior to the subapical ocelli of the forewing is well-defined; there are two ocelli towards the anal angle of the hindwing; the underside is richly coloured and is uniform in all the specimens; the ocelli are large; the forewing has three, the hindwing one, prominent dark bands crossing the wings.

26. Hipio constantia, Cramer.

A good series of both sexes of this fine species.

27. Hipio amabilis, Boisduval.

Hewitson as *Cyllo amabilis* from Bouru. One male and two females received. The male has two medium-sized ocelli on the underside of the forewing at the apex, the lower twice as large as the upper; the hindwing has first a very large, then two minute, then three nearly

equal-sized and rather large ocelli. One female has on the underside of the forewing at the apex one medium-sized ocellus, in the other specimen it is wanting; the hindwing has the ocelli as in the male, except that the one in the discoidal interspace is wanting in one specimen, and in the other that that ocellus and the one in the lower subcostal interspace also is absent.

Subfamily Elymniinæ.

28. Elymnias (*Dyctis*) viminalis, Wallace.

Originally described from Bouru.

Subfamily Nymphalinæ.

29. Cupha lampetia, Linnæus.

Both sexes received.

30. Atella egista, Cramer.

Recorded from Bouru by Wallace.

31. Cynthia arsinoë, Cramer.

Males only received.

32. Precis hedonia, Linnæus.

A single very brightly-marked male received, with all the ocelli large and conspicuous, as in Blanchard's figure of "*Vanessa hedonia*, Fabricius," from Banda, in the Voy. Pole Sud, pl. ii, fig. 10 (1853).

33. Junonia erigone, Cramer.

Males only. Cramer's figure of this species with its bright red markings on the upperside is very bad.

34. Neptis (*Phædyma*) heliodora, Cramer.

"*Papilio*" *heliodora* is the type of Felder's genus *Phædyma*. My single female from Buru has the inner edge of the discal white band on the underside of the hindwing quite straight and even, while Cramer's figure of the species, probably also taken from a female, shews the band highly irregular and uneven. Unfortunately I have no specimens from Amboyna, from whence *P. heliodora* was described, to compare with my Buru example. Mr. W. F. Kirby in the Supplement to his Syn. Cat. Diurn. Lep., p. 742, n. 30 (1877), gives *N. heliodora* as a synonym of "*Papilio*" *pellucidus*, Goeze, but both species were described in the same year (1779), and as Cramer figured his species,

I prefer to use his name. Herr C. Ribbe in Iris, vol. ii, p. 237, n. 73 (1889), alters the spelling to "*pellucides*." Goeze's work is in none of the Calcutta libraries.

35. Neptis venilia, Linnæus.

Boisduval as "*Limenitis*" *venilia* from Bourou. My female from Buru differs from males from the same island in having all the white markings on the upperside larger and more conspicuous, and the blue coloration reduced. Dr. Staudinger's "*Athyma*" *venilia*, var. (ab. ?) *evanescens*, from Batjan, which he has kindly sent me, appears to be a very good local race, with all the white markings much reduced, *vide* Ex. Schmett., vol. i, p. 147, pl. li, *male* (1886).

36. Hypolimnas bolina, Linnæus.

Boisduval as "*Diadema*" *lasinassa*, Cramer, from Bourou. Wallace records it from every island in the Archipelago. Buru males are normal. I have three distinct forms of the female from Buru:—I, the upperside almost uniformly fuscous with no discal macular white or violet band between the second median nervule and the costa on the forewing; II, as in I, but with a deep orange patch in the submedian interspace of the forewing; III, as in I, but with the above-mentioned macular band, which is sometimes white, sometimes violet, and the outer half of the hindwing more or less bright brown; no orange patch. None of these forms have been named and figured by Cramer, though II approaches his "*Papilio*" *antigone*, and III his "*P.*" *melita*.

37. Hypolimnas alimena, Linnæus.

Boisduval as "*Diadema*" *alimena* from Bourou. Wallace as "*D.*" *alimena* from Bouru. Males only received.

38. Hypolimnas pandora, Wallace.

The female only is described from Bouru by Wallace. The male has a large discal violet patch on the upperside of the forewing divided into four portions by the black veins, the posteriormost portion in the submedian interspace is small, the two portions in the median interspaces are large, the anteriormost portion in the lower discoidal interspace as small as the first-mentioned portion; except for this violet patch the forewing is unmarked; the hindwing is like that of the female, except that the discal series of oval black spots are blind, in the female they are pupilled with violet. The hindwing differs from that of *H. pandarus*, Linnæus, in entirely lacking the large discal violet patch of that species, the orange area being consequently much larger. The underside differs but slightly from that of the female; in

the forewing the outer-discal series of spots is incomplete, those in the upper median and lower discoidal interspaces being absent, and the spots are blue instead of white. Boisduval records this species from Bourou as "*Diadema*" *pipleis*, Linnæus, which is the female of *Hypolimnas pandarus*, Linnæus, restricted to Amboyna and Ceram by Wallace.

39. Hypolimnas antilope, Cramer.

Wallace from Bouru. I have a good series of both sexes from Buru. The typical form figured by Cramer has a broad submarginal pale ochreous-white band on the upperside of the hindwing, in some specimens this band is of a deeper colour, being quite ochreous, in other examples the band is obsolete, the hindwing being almost uniformly coloured. In some specimens the submarginal series of small white spots on the upperside of the forewing is obsolete towards the apex, in others the two anteriormost spots are large and wedge-shaped. On the underside the same variations occur as on the upperside. This species is quite distinct from *H. anomala*, Wallace, from the Malay Peninsula, Sumatra, Nias, Java, Bali, Lombok, Celebes, and the Philippines. The Sambawa local race has been named *H. sumbawana* by Dr. Pagenstecher in Ent. Nach., vol. xxiv, p. 81 (1898).

40. *Parthenos nodrica, Boisduval.

Boisduval records this species from Bourou and New Guinea as "*Minetra*" *nodrica*. I have it only from the latter island; its occurrence in Buru is I believe more than doubtful.

41. *Euthalia (*Lexias*) æropus, Linnæus.

Recorded from Bourou by Boisduval as *Lexias æropus*, doubtless correctly.

42. Symbrenthia hippoclus, Cramer.

This species was originally described from Amboyna, and is recorded from the Moluccas by Wallace. Cramer's figure is not very good, as it shews the outer-discal series of spots on the underside of both wings, but especially on the hindwing, white instead of pale violet. The female in Buru is yellow.

43. Salamis sabina, Cramer.

Both sexes received, apparently common in Buru.

44. Cyrestis thyonneus, Cramer.

Boisduval as *Cyrestis thyoneus* [sic!] from Bourou.

45. Doleschallia crameri, Distant.

Mr. W. L. Distant has so renamed Cramer's figure of "*Papilio*" *polibete* from Amboyna, Ex. Lep., vol. iii, pl. ccxxxv, figs. C, D, *male* (1779). My Buru specimens agree very well with this figure, except that the spots on the upperside of the hindwing are black, the posterior one sometimes with a white pupil, instead of blue as figured.

Family LYCÆNIDÆ.

46. Gerydus leos, Guérin.

Both sexes of this species are described, and the female is figured, from Bourou, as "*Simæthus*" *leos*. On the plate the generic name is written "*Symethis*." I have one male only from Buru, but both sexes from South Celebes. It seems to be quite a distinct species, and has been described by Doherty from Sumba and Sambawa as *Gerydus teos* in Journ. A. S. B., vol. lx, pt. 2, p. 185, n. 92 (1891).

47. Gerydus ceramensis, Ribbe.

Miletus chinensis, var. *ceramensis*, Ribbe, Iris, vol. ii, p. 247, n. 95, pl. v (nec i), fig. 2, *female* (1889); *Gerydus boisduvalii* [sic!], Moore, var. *acragas*, Doherty, Journ. A. S. B., vol. lx, pt. 2, p. 186, n. 93 (1891).

Described by Herr C. Ribbe from South and East Celebes, Ambon, Saigun, Buru and Borneo. I have both sexes from Buru. The female agrees exactly with the figure of *G. ceramensis*, both sexes with the description of *G. acragas*, so there is but little doubt that the two species are synonymous. *G. acragas* was described from Sumba and Sambawa, and I have recorded it under this name from the Ké Isles, *vide* p. 263, n. 44, *ante*.

48. Pithecops dionisius, Boisduval.

Common in Buru. The late Herr C. Ribbe recorded it in Iris, vol. ii, p. 250, n. 105 (1889) from Great Ceram as *Plebejus* [sic!] *dionysius* [sic!]; Dr. A. Pagenstecher in Jahr. des Nass. Ver. für Natur., vol. xxxvii, p. 192 (1884) from Amboina as *Cupido dionisus* [sic!].

49. Lampides aratus, Cramer.

Buru specimens are quite typical.

50. Lampides elpis, Godart.

Males only received.

51. LAMPIDES HYLAS, Cramer.

Herr Ribbe recorded it (l. c., p. 249, n. 102) from Great Ceram as *Plebejus euchylas*, Hübner, but Cramer's name is the older.

52. ARRHOPALA HELIUS, Cramer.

Males only received.

53. ARRHOPALA FULLA, Hewitson.

Described from Boirou [sic!]. Males only received.

Family PAPILIONIDÆ.

Subfamily PIERINÆ.

54. *TERIAS ZORAIDE, Felder.

Dr. A. G. Butler in Ann. and Mag. of Nat. Hist., seventh series, vol. i, p. 59, n. 4 (1898), says that *T. zoraide* "Ranges from Bourou southwards to Australia." I have not received this species from Buru, but Australian specimens appear to me to be quite the same as *T. libythea*, Fabricius, which is much the older. Wallace records *T. drona*, Horsfield, from Bouru, that species being a synonym of *T. libythea*. Wallace's *T. drona* from Buru probably now stands in the collection of the British Museum as *T. zoraide*.

55. TERIAS CANDIDA, Cramer.

Recorded by Wallace from Bouru, and by Dr. Butler (l. c., p. 61, n. 11) from Amboyna and Ceram. I have females only from Buru, which agree absolutely with females from the Ké Isles.

56. TERIAS BIFORMIS, Butler.

Originally described from both sexes from Amboina. I have three females only from Buru, which are creamy-white on both surfaces. It is described and figured by Mr. Distant from Singapore as *T. lacteola*, but the Malay Peninsula is not given as one of the habitats of the species by Dr. Butler in his latest revision of the genus. Such white females occur sporadically in India, and in my opinion are only occasional "sports" of *T. hecabe*, Linnæus. As, however, I have no yellow females from Buru, I retain Dr. Butler's name for the species, which he says "Ranges from Nias through Borneo eastwards to Ternate and Batchian, extending south to Amboyna and Ceram, and probably crossing New Guinea, to reappear in the Louisiade and Solomon groups" (Ann. and Mag. of Nat. Hist., seventh series, vol. i, p. 76, n. 53 (1898). The male as described is "bright lemon-yellow" coloured. Wallace probably recorded this species from Bouru as

T. blanda, Boisduval, which is given by Butler as a synonym of *T. hecabe*, Linnæus.

Wallace describes *T. diversa* from Bouru and six other localities. Butler (l. c., p. 74, n. 50) restricts it to the Philippines.

Dr. Butler (l. c., p. 76, n. 52) says that *T. brevicostalis*, Butler, is probably found in Bourou, but I have not received it from thence.

57. Catopsilia crocale, Cramer.

Recorded by Wallace in Trans. Ent. Soc. Lond., third series, vol. iv, p. 413 (1867) from Bouru as "*Callidryas*" *alcmeone*, Cramer. One very heavily-marked female only received, which, however, is not as darkly coloured as Dr. Butler's figure of the same sex of his "*Callidryas*" *flava* (Lep. Ex., p. 23, n. 2, pl. ix, fig. 5, *female* (1869). Dr. Butler does not say whence the specimen he figured came, but he gives Celebes (Macassar), Ceram and Batchian for *C. flava*. I quite agree with his remark "This species may eventually turn out to be an extreme form of *C. crocale*."

58. *Hebomoia leucogynia, Wallace.

Described from Bouru by Wallace as "*Iphias*" *leucogynia*, and apparently confined to that island. Dr. Adolf Fritze discusses this species in his interesting paper on the genus *Hebomoia* (Zool. Jahr., vol. xi, p. 278 (1898).

59. *Elodina bouruensis, Wallace.

Originally described from Bouru.

60. *Huphina rachel, Boisduval.

Recorded from Bouru by Wallace as "*Pieris*" *rachel*.

61. *Huphina jael, Wallace.

Described from Bouru by Wallace as "*Pieris*" *jael*.

Boisduval describes a "*Pieris*" *theodice* from Bourou, but this locality is probably incorrect. Mr. Kirby records it from Chili and Peru.

62. *Appias ada, Cramer.

Recorded from Bouru by Wallace as "*Tachyris*" *ada*.

63. *Appias albina, Boisduval.

Males and white females (Form I) recorded from Bouru by Wallace as "*Tachyris*" *paulina*, Cramer, the latter being found only in Ceylon.

64. *Appias leis, Hübner.

Recorded from Bouru by Wallace as "*Tachyris*" *jacquinotii*, Lucas, which species is, in my opinion, a synonym of *A. leis*.

65. *Appias cynisca, Wallace.

Described by Wallace from Bouru from the female sex only as "*Tachyris*" *cynisca*.

66. *Appias bouruensis, Wallace.

Described from a unique female from Bouru by Wallace as "*Tachyris*" *bouruensis*.

67. Delias philotis, Wallace.

Both sexes described from Bouru by Wallace. My male specimens are a little variable, in some there is a small white spot at the posterior end of the discoidal cell of the forewing on the underside, in others it is absent. This is probably the species Boisduval records from Bourou as "*Pieris*" *phillyra* [sic!], Godart, which equals *D. cæneus*, Linnæus.

68. Delias echo, Wallace.

Described from Bourou by Wallace.

Subfamily Papilioninæ.

69. Troides oblongomaculatus bouruensis, Wallace.

Males only received. This must be the species Boisduval recorded from Bourou as *Ornithoptera hellen*.

70. Papilio polydorus, Linnæus.

Apparently the commonest species of the genus in Buru.

71. Papilio fuscus, Goeze.

A variable species even in a comparatively small island like Buru. Herr Ribbe records it from Buru under its synonym *P. cinereomaculatus*, Goeze.

72. *Papilio gambrisius, Cramer.

Recorded from Buru by Wallace, Oberthür and Rothschild.

73. Papilio deiphobus, Linnæus.

Apparently not rare in Buru, from whence it has been recorded by many authors.

74. *Papilio deiphontes, Felder.

The Hon. Walter Rothschild draws especial attention to the fact

that Mr. Doherty on his first visit to Buru obtained both *P. deiphobus*, Linnæus, and *P. deiphontes* on that island (Nov. Zool., vol. ii, p. 326 (1895). I have only received three males of the former species, all of which have long tails; the latter species, which I have only from Ternate and Halmahera, has no distinct tail, only a tooth.

75. *Papilio polytes alphenor, Cramer.

Not received by me.

76. *Papilio eurypylus, Linnæus.

Not received by me.

77. *Papilio sarpedon anthedon, Felder.

Recorded from Bourou by Boisduval as *P. sarpedon*, Linnæus.

78. Papilio agamemnon plisthenes, Felder.

Females only received. All the species in this subfamily given above have been recorded from Buru by the Hon. Walter Rothschild.

Family HESPERIIDÆ.

79. Tagiades metanga, Ribbe.

T. neira, Plötz, var. *metanga*, Ribbe, Iris, vol. ii, p. 265, n. 143, pl. v, fig. 8 (1889).

I do not know *T. neïra*, Plötz, which was described from the Aru islands. The var. *metanga* was described from Great Ceram. My two females agree very well with the figure of the latter.

80. Tagiades japetus, Cramer.

Both sexes of this widely-distributed species received.

81. Notocrypta feisthamelii, Boisduval.

Described as "*Hesperia*" *feisthamelii*, Boisduval, from Amboina and Bourou. In the text of "Voyage de l'Astrolabe," Entomologie, part 1, p. 159 (1832), the reference to the plate and figure is incorrect, it should be plate iii instead of ii, and figure 6 instead of 7. The late Herr C. Ribbe in Iris, vol. ii, p. 263, n. 142, pl. v, fig. 7 (1889), describes and figures what appears to be a female of this species from Great Ceram as "*Plesioneura*" *varians*. My females from Buru agree exactly with Herr Ribbe's figure. The "*Plesioneura*" *chimæra* of Plötz, Berl. Ent. Zeitsch., vol. xxvi, p. 262, n. 4 (1882), described from "India," is also a synonym. Herr G. Weymer has kindly sent me a coloured drawing of a specimen of *P. chimæra* identified by the late Herr Plötz himself. On the underside of the forewing as drawn the discal white fascia ends anteriorly at the subcostal nervure as in *N. restricta*, Moore.

82. Telicota bambusæ, Moore.

The male specimens from Buru have the sexual brand on the upperside of the forewing very prominent, whitish and shining. The late Herr C. Ribbe sent me a female of this species from Ceram named "*Pamphila*" *ahrendti*, Plötz, and under this name the species stands in Iris, vol. ii, p. 261, n. 136 (1889). It was originally described as "*Hesperia*" *ahrendti* from Manila in the Philippines, but is not mentioned in Herr Georg Semper's "Schmetterlinge Philippinischen Inseln." On l. c. pl. v, fig. 5, Herr Ribbe figures a *Pamphila arendti* [sic], but this figure does not in the least agree with *T. bambusæ*.

83. Telicota augias, Linnæus.

Males only received. The discal oblique black fascia bearing the sexual brand on the upperside of the forewing is unusually narrow in these specimens, consequently the golden-yellow band beyond is unusually broad.

84. Telicota (*Padraona*) prusias, Felder.

Females only received, which agree exactly with specimens of the same sex in my collection from the Philippines and Celebes.

85. Telicota (*Padraona*) palmarum, Moore.

Males only received. These specimens do not agree with Felder's figure of "*Pamphila*" *augiades*, *male*, from Amboina. That species, which I have never succeeded in obtaining, is very closely allied to *T. palmarum*.

86. Ocybadistes marnas, Felder.

My male specimens from Buru and Waigiou (Waijiu or Waigeu) agree very well with Messrs. Elwes and Edwards' description of "*Pamphila*" *marnas*, Felder (described originally from Amboina), in Trans. Zool. Soc. Lond., Zoology, vol. xiv, p. 256 (1897). Messrs. Elwes and Edwards ignore Mr. Heron's genus *Ocybadistes*, although it was described in 1894, and place the present species in the genus *Telicota*, though Capt. Watson pointed out in 1893 that *P. marnas* and some other species were not true *Telicotas*.

87. Baoris (*Chapra*) mathias, Fabricius.

My male specimens from Buru have no translucent spots whatever in the forewing, though the usual discal spots appear on the underside but are opaque, while the females are normal.

88. Baoris (*Parnara*) philippina, Herrich-Schäffer.

Both sexes received. It seems to be common in Buru.

89. Baoris (*Parnara*) contigua, Mabille.

Two males of this variable and widely-spread species from Buru have been received. In both examples the two spots in the discoidal cell of the forewing are well separated, but this is a very inconstant feature; in one specimen there is a single spot, in the other two spots only, on the disc of the hindwing, the normal number being four.

90. Hasora (*Parata*) celænus, Cramer.

Originally described from what appears to be a male (though the sexual brand is not figured) from Amboyna. I have both sexes from Buru. The female shews in a good light on the upperside of both wings a very magnificent plumbeous gloss, which is entirely wanting in the male. The coloration of both wings on the underside is in the female of a much paler and lighter shade than in the male, and green instead of purple. *Hasora violacea*, Elwes and Edwards, Trans. Zool. Soc. Lond., vol. xiv, pp. 297, 299 (1897), from Amboina, is said to be allied to *H. celænus*, but the male differs from that species as identified by me in having no sexual brand.

91. Hasora (*Parata*) malayana, Felder.

Two females only received from Buru. Like examples from the Ké Isles, these Buru specimens are without spots on the forewing.

92. Hasora (*Parata*) hurama, Butler.

Both sexes received from Buru, which differ the one from the other only in the presence in the male of the sexual brand on the upperside of the forewing, this being absent in the female.

93. *Hasora thridas, Boisduval.

Described from Bourou as "*Thymèle*" *thridas* by Boisduval. As far as Boisduval's short description goes it agrees with the specimens I have identified as *H. malayana*, Felder. But Watson says in Proc. Zool. Soc. Lond., 1893, p. 128, that *H. thridas* comes into group A of the genus in which the sexual brand in the male is either inconspicuous or entirely absent, while the male of *H. malayana* has it conspicuous, and comes into his group B.

INDEX.

Names of New Genera and Species have an asterisk (*) prefixed.

Acacia, 260
ACANTHACEÆ, 300
Acanthocyclus, 68
Actæa, 73, 74, 121, 137, 143, 146, 147, 153, 154, 166
„ *acantha*, 151
„ *arcolata*, 138, 141
„ *calculosa*, 139, 152
„ *carcharias*, 151
„ *cavipes*, 139, 147, 148
* „ *echinus*, 139, 149
* „ *flosculata*, 139, 151
„ *fossulata*, 139, 148
„ *granulata*, 139, 151, 152, 153
„ *hirsutissima*, 138, 141
„ *hystrix*, 151
„ *nodosa*, 142
„ *nodulosa*, 139, 148, 149, 150
„ „ var. *bullifera*, 149
„ *obesa*, 139, 145, 146
„ *parvula*, 139, 146
„ *peronii*, 139, 150
„ *pulchella*, 139, 146
„ *pura*, 151
„ *rufopunctata*, 138, 142, 143, 144, 149
„ *rugata*, 144
„ *ruppellii*, 139, 144, 145, 146, 153
„ *Savignii*, 152
„ *schmardæ*, 148
„ *speciosa*, 138, 143
„ *tomentosa*, 138, 140, 141, 142
ACTÆINÆ, 70, 78, 137
Actæodes, 137, 154
„ *cavipes*, 147
„ *modestus*, 146
„ *nodipes*, 143
„ *speciosus*, 143
„ *tomentosus*, 140
Actumnus, 75, 190, 198, 200, 206, 207
* „ *arbutum*, 201, 205
„ *elegans*, 201, 206
* „ *fissifrons*, 201, 204
„ *nudus*, 68, 201, 207
„ *setifer*, 201, 202
* „ *tessellatus*, 201, 205, 206
„ *tomentosus*, 201, 202, 203
„ *verrucosus*, 68, 201, 203
Acchmandra Blumeana, 29
„ *indica*, 39
Aegle aeneus, 104
„ *granulosus*, 101
„ *rugata*, 144
„ *ruppellii*, 144
Aeschynanthus gracilis, 299
* „ *grandiflora*, var. *longiflora* 299
* „ *micrantha*, var. *Pottingeri* 299
* „ *pusilla*, 299
**Agalma Lavranceanum*, 293
„ *redivivum*, 51
Agapetes, 296, 297, 298
* „ *Desmogyne*, 298
* „ *Pottingeri*, 296, 298
Alangium Faberi, 295
* „ *Kingianum*, 294
Albizzia, 262
Alsomitra, 25, 42
„ *Capricornica*, 42
„ *cissoides*, 40
„ *clavigera*, 42, 292
„ *laxa*, 40
* „ *pubigera*, 292
Amblypodia, 269
„ *micale*, 270
Ameletia indica, 3
Ammannia, 2
„ *acutidens*,
„ *baccifera*, 3
„ *debilis*, 4
„ *elongata*, 3
„ *indica*, 4
„ *latifolia*, 3
„ *nana*, 3
„ *peploides*, 3
„ *polystachya*, 3
„ *repens*, 3
„ *verticillata*, 4
„ *vesicatoria*, 3
AMMANNIÆ, 2
Amorphophallus, 305
* „ *Cruddasianus*, 305
Ampittia maro, 277
Ancylozipha agraulia, 281
Ancyloxypha, 281
Anona muricata, 277
ANONACEÆ, 284
Antidesma, 19
Apaustus, 281

Appias ada, 317
„ *albina*, 273, 317
„ *bouruensis*, 318
„ *celestina*, 272
„ *clavis*, 273
„ *cynisca*, 318
„ *leis*, 318
„ *lyncida*, 272
Arachnesthra asiatica, 64, 65
„ *zelonica*, 64, 65
Aralia, 43
„ *armata*, 44
„ *digitata*, 52
„ *dubia*, 58
„ *feroz*, 44, 45
„ *Thomsoni*, 44
ARALIACEÆ, 1, 42, 45, 59, 293
Aralidium, 43, 45
„ *pinnatifidum*, 45
Araliopsis andamanica, 62
Arisarum amboinicum, 302, 303
Aristolochia, 273, 274
AROIDEÆ, 301, 302, 305
Arrhopala amytis, 270
„ *fulla*, 316
„ *helius*, 270, 316
Arthrophyllum, 43, 59, 60
„ *Blumeanum*, 59
„ *diversifolium*, 59
„ *ellipticum*, 59
„ *javanicum*, 59
„ *ovalifolium*, 59
„ *pinnatum*, 59
Arum orizense, 302, 304
„ *trilobatum*, 302, 303, 304
Asthipa citrina, 255
Atelecyclus, 69
Atella egista, 258, 312
Atergatis, 71, 89, 94, 98, 99, 104
„ *anaglyptus*, 102
„ *asperimanus*, 98
„ *dilatatus*, 95, 96
„ *elegans*, 108
„ *floridus*, 95, 98
„ *integerrimus*, 95, 96, 97, 98
„ *lævigatus*, 97
„ *lateralis*, 108
„ *limbatus*, 101
„ *marginatus*, 97
„ *roseus*, 95, 97
„ *scrobiculatus*, 97
„ *semigranosus*, 101
„ *subdentatus*, 96
„ *subdivisus*, 96
Athyma lactaria, 260
„ *venilia*, 261
„ „ var. *evanescens*, 313
Aubletia caseolaris, 11
AURANTIACEÆ, 275
Badamia exclamationis, 283
Banareia, 73, 153
Banareia armata, 153
Baoris contigua, 321
„ *larika*, 282
„ *mathias*, 282, 320
„ *philippina*, 282, 321
„ (*Chapra*) *mathias*, 282, 320
„ (*Parnara*) *contigua*, 321
„ „ *larika*, 282
„ „ *philippina*, 282, 321
**Baptozius*, 76, 186, 187, 188
„ *vinosus*, 189
Bauhinia excelsa, 290
„ *nervosa*, 290
* „ *Pottingeri*, 289
BEGONIACEÆ, 1
Benincasa, 25, 34
„ *cerifera*, 35
„ *hispida*, 34
Betanga duponchelii, 310
Bindahara isabella, 270
Blackwellia, 22
„ *caryophyllacea*, 22
„ *dasyantha*, 22
„ *longiflora*, 22
„ *macrostachya*, 20
„ *propinqua*, 21
„ *spiralis*, 21
Brassaiopsis, 43, 61
„ *confluens*, 58
„ *Hainla*, 62
„ *plamata*, 61
„ „ var. *andamanica*, 62
Bryonia Blumei, 39
„ *cheirophylla*, 34
„ *cochinchinensis*, 32
„ *epigæa*, 39
„ *geminata*, 39
„ *grandis*, 32
„ *heterophylla*, 39
„ *marginata*, 39
„ *palmata*, 29
„ *tenella*, 39
„ *umbellata*, 27
Callidryas alcmeone, 317
„ *flava*, 271, 317
Calliplœa hopfferi, 256, 257
„ *visenda*, 256, 257
CALYCIFLORÆ, 1
Calysisme perseus, 257, 311
Cancer, 67, 69, 70
„ *adspersus*, 80
„ *æneus*, 104
„ *amphitrite*, 104
„ *anaglyptus*, 133
„ *bispinosus*, 136
„ *calculosus*, 152
„ *convexus*, 80
„ *cymodoce*, 219
„ *daira*, 155
„ *dentatus*, 129

Cancer distinguendus, 113, 123
„ *dodone*, 108
„ *electra*, 133
„ *exsculptus*, 110
„ *floridus*, 98, 104
„ *fossulatus*, 148
„ *glaberrimus*, 223
„ *granulatus*, 151
„ *huonii*, 111
„ *impressus*, 115
„ *inæqualis*, 119
„ *incomparibilis*, 104
„ *integerrimus*, 95
„ *limbatus*, 101
„ *maculatus*, 79
„ *mamillatus*, 110
„ *marginatus*, 97
„ *marmarinus*, 80
„ *melissa*, 110
„ *metis*, 133
„ *niger*, 160
„ *ochtodes*, 135
„ *ocyroe*, 98
„ *perlatus*, 155
„ *polydora*, 150
„ *roseus*, 97
„ *ruber*, 79
„ *rubromaculatus*, 93
„ *rufopunctatus*, 222
„ *rumphii*, 106, 178
„ *savignyi*, 151
„ *saxatile*, 79
„ *saxatilis*, 106
„ *tenax*, 187
„ *variolosus*, 155
„ *vespertilio*, 192
„ (*Actæa*) *granulatus*, 151
„ (*Galene*) *bispinosus*, 136
„ (*Liagore*) *rubromaculatus*, 93
„ (*Xantho*) *distinguendus*, 113, 123
CANCERIDES, 69
CANCERIENS, 69
„ ARQUÉS, 69
„ QUADRILATERES, 69
CANCRIDÆ, 67, 69, 70
CANCRINÆ, 69
CANCROIDEA, 68, 232
„ CYCLOMETOPA, 68
„ PORTUNINEA, 68
Candalides, 265
CARPILIOIDA, 77, 78
Carpilius, 72, 78, 81, 90, 152
„ *cinctimanus*, 88
„ *convexus*, 79, 80
„ *lividus*, 80
„ *maculatus*, 79
„ *marginatus*, 97
„ *roseus*, 97
„ *venosus*, 83
Carpilodes, 72, 81, 85
• „ *cariosus*, 82, 86
Carpilodes cinctimanus, 88
• „ *lophopus*, 81, 84
„ *margaritatus*, 67, 82, 85, 86
„ *monticulosus*, 82, 86
• „ *pediger*, 81, 83
„ *ruber*, 83
„ *rugatus*, 82, 84, 85
„ *stimpsoni*, 81, 82, 83
„ *tristis*, 81, 82, 83, 85
„ *vaillantianus*, 82, 85
„ *venosus*, 67, 81, 83
Carpilozanthus, 81
„ *rugatus*, 84
„ *vaillantianus*, 85
Cascaria, 14
„ *albicans*, 15, 16, 18
• „ *andamanica*, 15, 16
„ *Championii*, 17
„ *cinerea*, 16
„ *Clarkei*, 15, 18
„ *esculenta*, 15, 16
„ *grewiæfolia*, 15, 16
• „ *Kunstleri*, 15, 17
„ *lævigata*, 17
„ *Lobbiana*, 15
„ *macrocarpa*, 15, 16, 18
„ *subcuneata*, 16
„ *variabilis*, 16
„ *varians*, 17
„ *Zeylanica*, 17
CATAMETOPES, 69
Catappa, 292
Catochrysops cnejus, 269
„ *lithargyria*, 269
„ *strabo*, 269
Catopsilia alcmeone, 271
„ *crocale*, 271, 283, 317
„ „ ab. *flava*, 271
„ *pomona*, 271
Cerasiocarpum Maingayi, 39
„ *penangense*, 39
Cethosia cydalima, 258, 283
„ *cydippe*, var. *damasippe*, 258
„ *insulata*, 258
„ *lamarckii*, 259
Chanapa sacerdos 256, 257
Chapra agna, 282
„ *mathias*, 282, 320
Charaxes keianus, 262, 283
„ *pyrrhus keianus*, 262
Cheirantha, 58
Chirosa, 255
„ *lapeyrousei*, 310
CHLORODINÆ, 70, 78, 156
CHLORODIOIDA, 78, 159
Chlorodius, 74, 159, 161, 162, 165, 172
„ *arcolatus*, 162, 166
„ *cavipes*, 122
„ *cytherea*, 160
„ *dentifrons*, 133
„ *depressus*, 160

Chlorodius distinguendus, 113
„ *edwardsi*, 120
„ *eudorus*, 122
„ *ezaratus*, 118
„ *fragifer*, 151
„ *hirtipes*, 160
„ *lævissimus*, 160, 161
„ *monticulosus*, 163
„ *nebulosus*, 160
„ *niger*, 159, 160, 161
„ *nodosus*, 120
„ *nudipes*, 121
„ *obscurus*, 163
„ *perlatus*, 166
„ *polyacanthus*, 150
„ *samoensis*, 134
„ *sanguineus*, 119
„ *sculptus*, 164
„ *ungulatus*, 162
Chlorodopsis, 74, 159, 165, 171, 172
„ *areolata*, 165, 166, 172
„ *melanochira*, 166, 168
„ *melanodactylus*, 171
„ *nigrocrinita*, 166, 168
„ *ornata*, 171
„ *pilumnoides*, 165, 167, 168, 169
„ *spinipes*, 166, 169, 171
* „ *wood-masoni*, 166, 170
„ (*Cyclodius*) *ornata*, 171]
CINNYRIDÆ, 64
Clitoria, 287
Coereba, 66
„ *cyanea*, 64, 65
COEREBIDÆ, 66
COLLÆA, 287
COMBRETACEÆ, 291
COMMELYNACEÆ, 301
CONNARACEÆ, 285
Cordylanthus frutescens, 22
CORNACEÆ, 1, 45, 294
Corystoidea, 69
**Cruddasia*, 287
* „ *insignis*, 287
Crypteronia, 2, 4
„ *glabra*, 5, 6
„ *Griffithii*, 5, 6
„ *paniculata*, 5
„ *pubescens*, 5, 6
Cryptotheca apetala, 4
CUCUMERINEÆ, 24
Cucumis ægyptiacus, 34
„ *integrifolius*, 31
„ *Missionis*, 27
Cucurbita alba, 35
„ *farinosa*, 35
„ *hispida*, 35
„ *melopepo*, 29
„ *Pepo*, 35
„ *villosa*, 35
CUCURBITACEÆ, 1, 21, 34, 40, 41, 292
Cupha crameri, 258
„ *lampetia*, 312
Cupido dionisus, 315
Curetis, 270
„ *tagalica*, 270
Cuscus, 253
Cyaniris, 264
„ *cagaya*, 264
„ *kuehni*, 264
„ *puspa*, 264
Cyclodius, 74, 78, 159, 171
„ *ornatus*, 171
CYCLOMETOPA, 68, 69
Cycloxanthus, 74, 112, 124, 125
„ *lineatus*, 68, 124
Cyllo annabilis, 257, 311
„ *leda*, 311
Cymo, 74, 78, 172
„ *andreossyi*, 173, 174, 175
„ „ var. *melanodactylus*, 174
„ *deplanatus*, 173, 174
„ *melanodactylus*, 173, 174
„ *quadrilobatus*, 173, 175, 176
„ *tuberculatus*, 68, 173, 176
CYMOIDA, 78, 172
Cynthia arsinæ, 312
„ *cycnia*, 259
Cyrestis thyoneus, 314
Daira, 71, 154
„ *perlata*, 155
„ *variolosa*, 155
Dalbergia Benthami, 289
* „ *Kingiana*, 289
„ *rubiginosa*, 289
DANAINÆ, 254, 308
Danais affinis, 255
„ *alcathoë*, 309
„ *citrina*, 255
„ *hamata*, 254
„ *intensa*, 255
„ *ismare*, 309
„ *juventa*, 309
„ *laratensis*, 255
„ *lutescens*, 309
„ *meganira*, 309
„ *petilia*, 254
„ *septentrionis*, 254
„ *sobrina*, 309
„ (*Asthipa*) *citrina*, 255
„ (*Limnas*) *petilia*, 254
„ (*Nasuma*) *ismare*, 309
„ (*Radena*) *juventa*, 309
„ „ *meganira*, 309
„ „ *sobrina*, 309
„ (*Ravadeba*) *lutescens*, 309
„ (*Salatura*) *affinis*, 255
„ „ *laratensis*, 255
„ (*Tirumala*) *hamata*, 254
Danaus chrysippus, 254
„ *gloriola*, 255

Danaus plexippus, 255
Debis europa, var. *arete*, 311
Delias cæneus, 318
„ *echo*, 318
„ *philotis*, 318
Dendropanax, 43, 58, 294
* „ *Listeri*, 294
* „ *Maingayi*, 58
„ *parviflorum*, 58
Dendrophis pictus, 67
**Derris latifolia*, 288
„ *thyrsiflora*, 289
„ *Wallichii*, 289
**Desmogyne*, 297, 298
* „ *neriifolia*, 297
Deudorix epijarbas, 270
„ *simsoni*, 270
Diadema alimena, 313
„ *hewitsoni*, 261
„ *lasinassa*, 313
„ *pandarus*, 261
„ *pipleis*, 314
Didymocarpus corchorifolia, 300
* „ *elatior*, 299
Dioclea, 287
DIPTERA, 306
Disporum pullum, 301
* „ „ var. *oblanceolata*, 301
Doleschallia australis, 262
„ *bisaltide*, 262
„ *crameri*, 262, 315
„ *polibete*, 262
„ *pratipa*, 262
Domæcius, 229
Domecia, 76, 229
„ *hispida*, 230
DOMECIOIDA, 177, 229
Dryophis mycterizans, 66
Duabanga, 2, 9
„ *grandiflora*, 10
„ *sonneratioides*, 10
Dyctis melane, 258
„ *viminalis*, 312
Elodina bouruensis, 317
„ *egnatia*, 271
Elymnias melane, 258
„ *viminalis*, 312
„ (*Dyctis*) *melane*, 258
„ „ *viminalis*, 312
ELYMNIINÆ, 258, 308, 312
Enkylia digyna, 40
„ *trigyna*, 40
Entada, 305
* „ *borneensis*, 307
„ *pursætha*, 305, 306, 307
„ *Rumphii*, 306, 307
„ *scandens*, 306
* „ *spiralis*, 305, 307
Epilobium fruticosum, 12
Epizanthus, 75, 181, 184
„ *dentatus*, 184, 185
Epizanthus dilatatus, 186
„ *frontalis*, 184
„ *kotschii*, 185
Erina, 265
Eriphia, 76, 213
„ *gonogra*, 216
„ *lævimana*, 214, 216
„ „ var. *smithii*, 216
„ *scabricula*, 214
„ *smithii*, 214, 216
„ *trapeziformis*, 215
ERIPHIIDÆ, 67, 69, 70
ERIPHIINÆ, 70, 177, 213
ERIPHIOIDA, 177, 213
ESCALLONIEÆ, 291
Etisodes, 73, 77, 112, 132, 171
„ *anaglyptus*, 133, 134
„ *dentatus*, 130
„ *electra*, 133
„ *sculptilis*, 133
Etisus, 72, 112, 128, 132
„ *anaglyptus*, 133
„ *convexus*, 132
„ *dentatus*, 129, 131
„ *lævimanus*, 129, 131
„ *macrodactylus*, 132
„ *maculatus*, 132
„ *rugosus*, 133
„ *utilis*, 129, 130
Eudora impressus, 113, 115
„ *tenax*, 187
EUPHASEOLEÆ, 287
Eupilumnus websteri, 230
Euploea, 253, 256, 257, 261
„ *alcathoë*, 309
„ *assimilata*, 256, 261, 283
„ *bouruana*, 310
„ *callithoë*, 256, 257
„ *duponchelii*, 310
„ *eunice*, 310
„ *eurypon*, 255, 257
„ *fraterna*, 256
„ *hisme*, 310
„ *hopfferi*, 256, 257
„ *lapeyrousei*, 310
„ *leucostictos*, 310
„ *melancholica*, 309
„ „ var. *æthiops*, 309
„ *melina*, 309
„ *sacerdos*, 256, 257
„ *semicirculus*, 310
„ *spiculifera*, 309
„ *visenda*, 256, 257
„ *watsoni*, 310
„ (*Betanga*) *duponchelii*, 310
„ (*Calliploea*) *hopfferi*, 256, 257
„ „ *visenda*, 256, 257
„ (*Chanapa*) *sacerdos*, 256, 257
„ (*Chirosa*) *lapeyrousei*, 310
„ (*Gamatoba*) *alcathoë*, 309
„ „ *melancholica*, 309

Euplæa (Gamatoba) spiculifera, 309
„ (*Hirdapa*) *assimilata*, 256, 283
„ (*Salpinæ bouruana*, 310
„ „ *hisme*, 310
„ „ *leucostictos*, 310
„ (*Stictoplæa*) *watsoni*, 310
„ (*Vadebra*) *eurypon*, 255, 257
„ „ *melina*, 309
EUPLŒINA, 256
Eupsychellus, 263
„ *dionisius*, 263
Eupteron, 59
Eurema hecabe, 272
Euruppellia, 75, 186
„ *annulipes*, 188
„ *tenax*, 187, 188
„ *vinosa*, 189
Eurycarcinus, 75, 207, 209, 213
„ *grandidieri*, 210, 211
„ *maculatus*, 68, 210, 211, 212
„ *orientalis*, 210, 211, 212
Euthalia æropus, 262, 314
„ (*Lexias*) *æropus*, 262, 314
EUXANTHOIDA, 77, 109
Euxanthus, 72, 109, 111
„ *exsculptus*, var. *rugosus*, 110
„ *huonii*, 111
„ *mamillatus*, 110
„ *melissa*, 110, 111
„ *nitidus*, 110
„ *sculptilis*, 110, 111
Everes argiades, 267
FICOIDEÆ, 1
Galactia, 287
GALACTIEÆ, 287
Galene, 70, 74, 77, 127, 136, 232
„ *bispinosa*, 136
„ *ochtodes*, 135
GALENINÆ, 136
GALENOIDA, 77, 136
Gamatoba alcathoë, 309
„ *melancholica*, 309
„ *spiculifera*, 309
Gastonia palmata, 58
Gecko, 67
Gerydus acragas, 263, 315
„ *boisduvalii*, var. *acragas*, 315
„ *ceramensis*, 315
„ *leos*, 315
„ *teos*, 315
„ *vincula*, 263
GESNERACEÆ, 299
Gilibertia palmata, 58
Glycine, 287
Goniothalamus Gardneri, 284
* „ *peduncularis*, 284
„ *Thwaitesii*, 284
Grapsillus, 217
„ *maculatus*, 221
„ *subinteger*, 220
Gymnopetalum, 24, 31
„ *cochinchinensis*, 31, 32
„ *heterophyllum*, 33
„ *integrifolium*, 31
„ *quinquelobum*, 32
„ *quinqueloculare*, 2
„ *septemlobum*, 35
Gynostemma, 25, 40
„ *cissoides*, 40
„ *laxa*, 41
„ *pedata*, 40
„ *pedatum*, 293
GYNOSTEMMEÆ, 25
HÆMODORACEÆ, 300
Halimede, 71, 124, 125, 134, 135, 136
„ *thurstoni*, 68, 136
HALIMEDOIDA, 77, 134
Hamadryas, 225
„ *assaricus*, 309
„ *nais*, 225
„ *nivicipicta*, 225
Hapalocarpum indicum, 4
„ *vesicatorium*, 4
HAPLOTRICHIUM, 299
Hasora alexis, 283
„ *celænus*, 321
„ *chromus*, 283
„ *discolor*, 283
„ *doleschallii*, 282
„ *hurama*, 321
„ *malayana*, 283, 321
„ *thridas*, 321
„ *violacea*, 321
„ (*Parata*) *celænus*, 321
„ „ *hurama*, 321
„ „ *malayana*, 283, 321
Hebomoia, 317
„ *leucogynia*, 317
Hedera cheirantha, 58
„ *ferruginea*, 58
„ *heterophylla*, 56
„ *Jackiana*, 59
„ *ovata*, 59
„ *palmata*, 58
„ *polycantha*, 62
„ *venosa*, 52
Hederopsis Maingayi, 62
Henslovia, 6
„ *affinis*, 5
„ *glabra*, 5
„ *Hookeri*, 5
„ *leptostachys*, 5
„ *pubescens*, 5
Heptapleurum, 43, 46
* „ *affine*, 47, 54
„ *avene*, 46, 47
„ *biternatum*, 47, 56
„ *capitatum*, 49
„ *Cephalotes*, 46, 49, 50
* „ *Curtisii*, 47, 56
„ *divaricata*, 54

Heptapleurum ellipticum, 47, 49, 53, 54
„ *heterophyllum*, 47, 56
* „ *Hullettii*, 47, 54
* „ *latifoliolatum*, 47, 51
* „ *Lawranceanum*, 293
„ *longifolium*, 54
* „ *luridum*, 46, 48
* „ *nervosum*, 47, 55
* „ *Ridleyi*, 47, 54
„ *rigidum*, 50
„ *scandens*, 47, 53
* „ *Scortechinii*, 46, 49
„ *Singalangense*, 47, 51
„ *subulatum*, 47, 51
* „ *sub-racemosum*, 46, 49
„ *terebinthacea*, 52
„ *tomentosum*, 46, 50
* „ *triste*, 46, 48
„ *venulosum*, 47, 52, 53
„ „ var. *macrophylla*, 52
* „ *Wrayi*, 47, 55
* „ (*Agalma*) *Lawranceanum*, 293
Hesperia ahrendti, 320
„ *feisthamelii*, 319
„ *flavovittata*, 281
HESPERIIDÆ, 277, 319
Hestia aza, 308
„ *d'urvillei*, 254
„ (*Nectaria*) *aza*, 308
„ „ *d'urvillei*, 254
Heteropanax, 43, 61
„ *fragrans*, 61
Heteropanope, 75, 207, 210
„ *dentatus*, 185
„ *eucratoides*, 68, 209
„ *indica*, 208, 209
„ *lævis*, 208, 209
HETEROPANOPIOIDA, 177, 207
Heteropsis, 43, 62
Hipio, 257
„ *amabilis*, 311
„ *constantia*, 257, 311
Hirdapa assimilata, 256, 283
„ *fraterna*, 256
Hodgsonia, 24, 25
„ *heteroclita*, 25
„ *macrocarpa*, 26
HOLOCALYX, 296
Holochila, 265
„ *intensa*, 265
Homalium, 14, 19, 24
„ *caryophyllaceum*, 22
„ *cordylanthus*, 22
„ *fœtidum*, 22
„ *frutescens*, 20, 22
„ *grandiflorum*, 20, 23
„ *Griffithianum*, 20, 21
* „ *Kunstleri*, 20
„ *longifolium*, 20, 21
Homalium obovale, 23
„ *propinquum*, 20, 21
* „ *undulatum*, 20, 23
**Hoplozanthus*, 73, 112, 125
* „ *cultripes*, 126
* „ *hextii*, 126, 127
Huphina jael, 317
„ *rachel*, 273, 317
**Hydrangea Pottingeri*, 290
HYPEROLISSA, 70, 76, 77, 233
HYPEROMERISTA, 70, 176
Hypocalus, 71, 109, 111
„ *rugosus*, 68, 111
Hypolimnas, 254
„ *alimena*, 261, 313
„ „ var. *heteromorpha*, 261
„ *anomala*, 314
„ *antilope*, 314
„ *bolina*, 261, 313
„ *heteromorpha*, 261
„ *hewitsoni*, 254, 257, 261
„ *pandora*, 313
„ *polymena*, 254, 257, 261
„ *subawana*, 314
Hypolycæna danisoides, 270
Hypopeltarium, 69
Imperata arundinacea, 255
Indigofera atropurpurea, 286
„ *nigrescens*, 286
Involucraria Wallichiana, 30
„ *Wallichii*, 29
Iphias leucogynia, 317
Ismene, 283
„ *doleschalli*, 282
„ *malayana*, 283
Itea, 291
Jambosa aquæa, 270
Jamides astraptes, 268
„ *bochus*, 268
„ *cephion*, 268
„ *purpurata*, 268
Junonia erigone, 259, 312
„ *expansa*, 259
„ *orithya*, 259
„ *timorensis*, 260
„ *villida*, 259
Jussiæa, 12
„ *angustifolia*, 12
„ *Burmanni*, 12
„ *decumbens*, 12
„ *exaltata*, 12
„ *fruticosa*, 12
„ *longipes*, 12
„ *octophila*, 12
„ *repens*, 13
„ *scabra*, 12
„ *suffruticosa*, 12
„ *villosa*, 12
Lachnopodus, 73, 89, 90
„ *rodgersi*, 67, 89

Lachnopodus tahitensis, 92
Lagenaria dasystemon, 35
Lagerstræmia, 2, 6, 9
„ *celebica*, 8
„ *floribunda*, 6, 7
„ *Flos-Reginæ*, 6, 7, 8, 9
„ *grandiflora*, 10
„ *hexaptera*, 8
„ *hypoleuca*, 6, 7
„ *macrocarpa*, 9
„ *Munchhausia*, 9
„ *ovalifolia*, 7, 8
„ *Reginæ*, 9
„ *speciosa*, 9
Lagostoma, 154
„ *nodosa*, 120
„ *perlata*, 155
Lampides ælianus, 268
„ *ætherialis*, 268
„ *amphissa*, 269
„ *aratus*, 268, 315
„ *areas*, 269
„ *celeno*, 268
„ *elpis*, 315
„ *hylas*, 269, 316
LEGUMINOSÆ, 264, 268, 269, 286
LEMONIIDÆ, 263
LEPIDOPTERA, 254
Leptodius, 74, 112, 117
„ *cavipes*, 118, 122
„ *crassimanus*, 117, 118, 120, 121, 122
* „ *euglyptus*, 118, 121
„ *exaratus*, 117, 118, 120
„ „ var. *sanguineus*, 120
„ *nudipes*, 118, 121, 122
„ *sanguineus*, 118, 119, 120, 121
Leptosia xiphia, 271
Leptospartion grandiflorum, 10
Lethe arcuata, 311
„ *arete*, 311
Lexias æropus, 262, 314
Liagora, 74, 93
„ *rubromaculata*, 93
LIBYTHÆINÆ, 263
Libythea antipoda, 263
LILIACEÆ, 301
Limenitis venilia, 313
Limnas petilia, 254
Liomera, 72, 87, 90
„ *cinctimana*, 88
„ *lata*, 88
„ *longimana*, 90
„ *punctata*, 91
„ *rodgersii*, 89
* „ *sodalis*, 88
Liozantho, 74, 90
* „ *asperatus*, 91, 92
„ *punctatus*, 91, 156
* „ *tumidus*, 91
Liphyra brassolis, 271
„ „ *major*, 271
Lophactæa, 71, 99
„ *anaglypta*, 100, 102
* „ *corallina*, 100, 102
„ *cristata*, 100, 101, 103
„ *fissa*, 67, 100, 103
„ *granulosa*, 100, 101, 103
„ *semigranosa*, 100, 101, 103
Lophozanthus, 116
„ *bellus*, var. *leucomanus*, 113.
„ *scaberrimus*, 113, 116
„ „ var. *baccalipes*, 117
„ „ „ *cultripes*, 117
Lophozozymus, 73, 94, 106, 125
„ *bellus*, var. *leucomanus*, 113
„ *cristatus*, 67, 106, 107
„ *dodone*, 106, 108
„ *epheliticus*, 106
„ *incisus*, 106, 107
„ *octodentatus*, 106, 107
„ *radiatus*, 108
„ (*Lophozanthus*) *bellus*, var. *leucomanus*, 113
Ludwigia, 12, 13
„ *diffusa*, 14
„ *fruticulosa*, 14
„ *lythroides*, 13
„ *parviflora*, 13, 14
„ *prostrata*, 13
Luffa, 25, 33
„ *acutangula*, 34
„ *ægyptiaca*, 33
„ *cattu-picinna*, 34
„ *clavata*, 34
„ *cylindrica*, 34
„ *Gosa*, 34
„ *hederacea*, 34
„ *Parvala*, 34
„ *pentandra*, 34
„ *Petola*, 34
„ *racemosa*, 34
„ *Satpatia*, 34
„ *Wightiana*, 40
Lycæna mærens, 265
Lycænesthes emolus, 267
„ *turneri*, 267
LYCÆNIDÆ, 263, 266, 315
**Lysimachia exalvis*, var. *grandifolia*, 298
LYTHRACEÆ, 1
LYTHREÆ, 2
Lythrum Pemphis, 4
Maclellandia Griffithiana, 4
MACROZANONIA, 42
Mastersia assamica, 288
**Mastixia euonymoides*, 295
Medæus, 73, 77, 112, 114, 123
„ *distinguendus*, 113
„ *nodosus*, 123
Megisba malaya, 264

Melanitis, 257
„ *crameri*, 257
„ *gylippa*, 258
„ *leda*, 311
MELASTOMACEÆ, 1
Melia, 76, 230
* „ *cæstifer*, 231
* „ *pugil*, 231
„ *tessellata*, 231
MELIOIDA, 177, 230
Melissa, 109
„ *mamillata*, 110
„ *nitida*, 110
Melothria, 25, 37
* „ *affinis*, 38
„ *indica*, 38
„ *marginata*, 38, 39
„ „ var. *heterophylla*, 39
„ *Rumphiana*, 39
Menippe, 75, 177, 179
„ *bellangeri*, 178
„ *granulosa*, 179
„ *parvulus*, 146
„ *rumphii*, 178
„ (*Myomenippe*) *granulosa*, 179
MENIPPINÆ, 70, 176, 177
MENIPPIOIDA, 176, 177
Messaras crameri, 258
Mesua ferrea, 262
Miletus chinensis, var. *ceramensis*, 263, 315
Minetra nodrica, 314
Momordica, 25, 35, 39
„ *ægyptiaca*, 34
„ *anthelmintica*, 37
„ *Charantia*, 35, 37
* „ *Clarkeana*, 35
„ *Cochinchinensis*, 35, 36
„ *dioica*, 37
„ *humilis*, 37
„ *Luffa*, 34
„ *macropetala*, 37
„ *mixta*, 37
„ *muricata*, 37
„ *Roxburghiana*, 37
„ *subangulata*, 35, 36
„ *tubiflora*, 32
Morinda bracteata, 252
Munchhausenia speciosa, 9
Muricia Cochinchinensis, 37
Mycalesis daidis, 257
„ *hesione*, 310
„ *manipa*, 311
„ *medus*, 310
„ *perseus*, 257, 311
„ *remulia*, 311
„ *sirius*, 257, 311
„ (*Calysisme*) *perseus*, 257, 311
„ (*Mydosama*) *remulia*, 311
„ „ *sirius*, 257, 311
Mycalesis (*Orsotriæna*) *medus*, 310
Mydosama manipa, 311
„ *remulia*, 311
„ *sirius*, 257, 311
Myomenippe, 75, 177, 179
„ *duplicidens*, 179
„ *granulosa*, 179
MYRTACEÆ, 1
Nacaduba, 265
„ *ancyra*, 268
„ *ardates*, 268
„ *atrata*, 268
„ *hermus*, 267
„ *laura*, 268
„ *meiranganus*, 267
„ *nora*, 268
„ *perusia*, 268
Nasuma ismare, 309
Nectaria aza, 308
„ *d'urvillei*, 254
Nectopanope, 75, 207, 212
„ *longipes*, 213
„ *rhodobaphes*, 213
Neleus, 229
„ *acanthophorus*, 230
Nematopyxis fruticulosa, 14
„ *prostrata*, 14
„ *pusilla*, 14
Neopithecops, 264
„ *salmora*, 263
Neptis consimilis, 260, 283
„ *heliodora*, 312
„ *lactaria*, 260
„ *nectens*, 261
„ *venilia*, 261, 313
„ (*Phædyma*) *heliodora*, 312
„ „ *nectens*, 261
„ (*Rahinda*) *consimilis*, 260, 283
Neustanthus, 288
Nothopanax pinnatum, 60
Notocrypta feisthamelii, 278, 319
„ *restricta*, 319
„ *waigensis*, 278
NYMPHALIDÆ, 254, 308
NYMPHALINÆ, 258, 308, 312
Ocybadistes, 320
„ *marnas*, 320
Œthra, 67, 68, 69, 70
ŒTHRINÆ, 69
ONAGRACEÆ, 1, 11
**Ophiopogon cordylinoides*, 300
„ *dracænoides*, 301
**Ophiorrhiza Lawranceana*, 295
„ *lurida*, 295
Ornithoptera hellen, 318
„ *priamus*, 273
**Orphnoxanthus*, 75, 112, 127
„ *microps*, 128
Orsotriæna medus, 310
Osmelia, 14, 18
* „ *Maingayi*, 19

Oxyrhyncha, 68, 69
Oziinæ, 70, 176, 181
Ozioida, 176, 181
Ozius, 75, 181, 186, 187, 188
„ *annulipes*, 188
„ *frontalis*, 185
„ *rugulosus*, 182
„ *tenax*, 187, 188
„ *tuberculosus*, 182, 183
„ (*Euruppellia*) *annulipes*, 188
„ „ *tenax*, 187, 188
Padraona, 279, 280, 281
„ *augiades*, 278
„ *autoleon*, 280
„ *dara*, 279
„ *mæsa*, 279
„ *mæsoides*, 282
„ *palmarum*, 278, 320
„ *procles*, 278
„ *prusias*, 320
„ *sunias*, 279
* *Paederia Cruddasiana*, 295
„ *foetida*, 296
„ *linearis*, 296
„ *tomentosa*, 296
Pamphila ahrendti, 320
„ *arendti*, 320
„ *augiades*, 320
„ *augias*, 278
„ *larika*, 282
„ *mæsa*, 279
„ *marnas*, 320
„ *maro*, 277
„ *moseleyi*, 278
„ *sunias*, 281
Panax armatum, 45
„ *fragrans*, 61
„ *Jackianum*, 59
„ *palmatum*, 62
„ *pinnatum*, 60
„ *polycarpum*, 59
„ *secunda*, 60
Panopeus, 208
„ *acutidens*, 186
„ *caystrus*, 181
„ *dentatus*, 185
„ *herbstii*, 208
Papilio, 273
„ *ægeus keianus*, 275, 283
„ „ „ var. *amaranta*, 275
„ „ „ „ *blanca*, 275
„ „ *ormenus*, 275
„ „ „ ab. *amanga*, 275
„ „ „ „ *pandion*, 275
„ „ „ „ *polydorinus*, 275
„ *agamemnon*, 277
„ „ *argynnus*, 277
„ „ *plisthenes*, 319
„ *albinus thomsonii*, 274, 283
Papilio albinus thomsonii, ab. *mordingtoni*, 274
„ *ambrax epirus*, 276
„ *antigone*, 313
„ *argynnus*, 277
„ *beccarii*, 274
„ *cinereomaculatus*, 318
„ *codrus tocalensis*, 276, 283
„ *crocale*, 271
„ *deiphobus*, 276, 318, 319
„ „ ab. *hypoxanthos*, 276
„ *deiphontes*, 318
„ *erinus*, 265
„ *euchenor obsolescens*, 276
„ *eurypylus*, 319
„ „ *melampus*, 277
„ „ „ ab. *rufinus*, 277
„ *fuscus*, 318
„ *gambrisius*, 318
„ *heliodora*, 312
„ *iphigenia*, 261
„ *lampetia*, 258
„ *melampus*, 277
„ *melita*, 313
„ *ormenus*, 275
„ *pellucides*, 313
„ *pellucidus*, 312
„ *polibete*, 315
„ *polydorus*, 274, 318
„ „ *thessalia*, 274, 283
„ *polytes alphenor*, 319
„ *pomona*, 271
„ *sarpedon*, 319
„ „ *anthedon*, 319
„ „ *choredon*, 277
„ *thomsonii*, 274
Papilionidæ, 271, 316
Papilioninæ, 273, 318
Papua, 264
Parata celænus, 321
„ *hurama*, 321
„ *malayana*, 283, 321
Paratropia brachybotrya, 53
„ *elliptica*, 53
„ *heterophylla*, 56
„ *scandens*, 53
„ *Singalangense*, 51
„ *Singalense*, 51
„ *subulata*, 52
„ *tomentosa*, 50
„ *venulosa*, 52
Parnara contigua, 321
„ *larika*, 282
„ *philippina*, 282, 321
Parthenopidæ, 69
Parthenos brunnea, 261
„ *nodrica*, 314
„ *salentia*, 261
„ *sylvia*, 261
Passifloraceæ, 1

Pemphis, 2, 4
„ *acidula*, 4
„ *angustifolia*, 4
„ *setosa*, 4
Pentapanax, 293
* „ *stellatum*, 293
Pentapterygium, 297, 298
Peplis indica, 3
Pestolozzia lata, 40
„ *pedata*, 40
Phædyma, 312
„ *heliodora*, 312
„ *nectens*, 261
Philiris, 265
„ *ilias*, 265
Phymodius, 74, 159, 161, 165
„ *monticulosus*, 162, 163
„ *obscurus*, 163
„ *sculptus*, 156, 159, 162, 164
„ *ungulatus*, 162, 163, 164
PIERINÆ, 271, 316
Pieris jael, 317
„ *padusa*, 271
„ *perictione*, 273
„ *phillyra*, 318
„ *pitys*, 273
„ *rachel*, 273, 317
„ *theodice*, 317
Pierrea dictyoneura, 24
Pilodius, 165
„ *nigrocrinitus*, 168
„ *pilumnoides*, 167
„ *pugil*, 170
„ *scabriculus*, 171
„ *spinipes*, 169
PILUMNINÆ, 70, 176, 190
PILUMNOIDA, 177, 190
Pilumnopeus, 207
„ *maculatus*, 212
Pilumnus, 75, 190, 198, 199, 206
„ *andersoni*, 191, 194
„ *andreossyi*, 173
„ *cærulescens*, 191, 196
„ *cursor*, 191, 195
„ *dehaanii*, 191, 198
„ *dorsipes*, 191, 197
„ *forskalii*, 194
„ *hirsutus*, 191, 197
„ *labyrinthicus*, 68, 190, 199
„ *lævis*, 190, 199
„ *levimanus*, 199
„ *longicornis*, 191, 193, 194
„ *scabriusculus*, 206
„ *semilanatus*, 200
„ *seminudus*, 200
„ *setifer*, 202
„ *sluiteri*, 191, 194
„ *ursulus*, 192
„ *vespertilio*, 191, 192, 197
„ „ var. 193
Pirimela, 67, 69, 70
PIRIMELIDES, 69
Pithecops, 263
„ *bassaris*, 263
„ *dionisius*, 315
Platypilumnus, 70, 76, 232
„ *gracilipes*, 233
Platypodia, 94
Plebeius ælianus, 268
„ *cælius*, 267
„ *cagaya*, 264
„ *euchylas*, 269
„ *illustris*, 266
„ *kühni*, 264
„ *lucifer*, 263, 264
„ *seltuttus*, 267
„ *tualensis*, 264
„ *unicolor*, 267
Plebejus astraptes, 268
„ *bæticus*, 269
„ *dionysius*, 263, 315
„ *euchylas*, 316
„ *kandarpa*, 269
Plesioneura chimæra, 319
„ *varians*, 319
„ *waigensis*, 278
Polycremnus, 71, 123, 124, 134, 135
„ *ochtodes*, 135
Polycyma, 265
„ *carythæ*, 265
POLYDECTINÆ, 69
Polydectus, 70
Polyommatus bæticus, 269
PORTUNIDÆ, 69
* *Pottingeria*, 291
* „ *acuminata*, 291
Precis expansa, 259
„ *hedonia*, 312
„ *ida*, 259
„ *iphita*, 259
„ *zelima*, 259
PRIMULACEÆ, 298
Psaumis, 137
„ *fossulata*, 148
„ *glabra*, 143
Pseudocarcinus, 177
„ *bellangeri*, 178
Pseudodipsas, 265
„ *eone*, 265
„ *ilias*, 265
PSEUDOZIOIDA, 176, 180
Pseudozius, 75, 180
„ *caystrus*, 181
„ *planus*, 181
Pueraria, 287, 288
* „ *bella*, 288
„ *peduncularis*, 288
„ *Thunbergiana*, 288
Punica, 2
Pyranga rubra, 66
Quadrella, 76, 217, 225
* „ *boopis*, 227

Quadrella coronata, 226, 227
* „ „ var. *maculosa*, 226
* „ „ „ *reticulata*, 227
Radena juventa, 309
„ *meganira*, 309
„ *sobrina*, 309
Rahinda consimilis, 260, 283
Rapala phronga, 270
Ravadeba lutescens, 309
* *Rhinacanthus calcaratus*, var. *maxima*, 300
* „ *maximus*, 300
Rhizophora caseolaris, 11
RUBIACEÆ, 295
Ruppellia, 186, 187, 188
„ *annulipes*, 188
„ *lata*, 187
„ *tenax*, 187
„ *vinosa*, 187, 188, 189
RUPPELLIOIDA, 176, 186
Rusticus Adolescens xanthospilos, 265
Salamis sabina, 262, 314
Salatura affinis, 255
„ *laratensis*, 255
Salpinx, 256, 310
„ *bouruana*, 310
„ *hisme*, 310
„ *leucostictos*, 310
Sambucus 263
SAMYDACEÆ, 1, 14
SAMYDEÆ, 16
SATYRINÆ, 257, 310
Satyrus manipa, 257, 311
SAXIFRAGACEÆ, 290
Sciadophyllum avene, 48
„ *ellipticum*, 53
„ *scandens*, 53
„ *tomentosum*, 50
Scotanthus Porteanus, 33
„ *tubiflorus*, 32
Simæthus leos, 315
SOLANACEÆ, 298
Solanum ferox, 298, 299
* „ „ var. *inermis*, 298
„ *Melongena*, 299
Solenocaulon, 88
Sonneratia, 2, 10, 11
„ *acida*, 10, 11
„ „ var. *Griffithii*, 10, 11
„ *alba*, 10, 11
„ *evenia*, 11
„ *Griffithii*, 11
„ *lanceolata*, 11
„ *Mossambicensis*, 11
„ *neglecta*, 11
„ *obovata*, 11
„ *ovalis*, 11
„ *Pagapat*, 11
Spatholobus ferrugineus, 287
„ *gyrocarpus*, 287
* „ *Pottingeri*, 286
Sphenomerus, 76, 217, 227
„ *trapezioides*, 228
Spongodes, 227
* *Sterculia cognata*, 285
„ *parvifolia*, 285
„ *Roxburghii*, 285
„ *striatiflora*, 285
STERCULIACEÆ, 285
Stictoplœa watsoni, 310
Streptolirion volubile, 301
* „ „ var. *setosa*, 301
Symbrenthia hippoclus, 314
Symethis, 315
Symphædra æropa, 262
SYRPHIDÆ, 306
Tachyris ada, 273, 317
„ *bouruensis*, 318
„ *cynisca*, 318
„ *jacquinotii*, 318
„ *lyncida*, 272
„ *paulina*, 317
* *Taeniochlæna birmanica*, 285
„ *Griffithii*, 285
Tagiades japetus, 277, 283, 319
„ *metanga*, 319
„ *neira*, 319
„ „ var. *metanga*, 319
Taractrocera, 281
Telicota, 278, 320
„ *augias*, 278, 320
„ *bambusæ*, 278, 320
„ *dara*, 279
„ *moseleyi*, 278
„ *palmarum*, 320
„ *prusias*, 320
„ (*Padraona*) *dara*, 279
Telicota (*Padraona*) *palmarum*, 320
„ „ *prusias*, 320
Tellervo, 255
„ *assarica*, 309
„ *zoilus*, 255
TELPHUSIDÆ, 68, 69
Terias, 272
„ *biformis*, 316
„ *blanda*, 317
„ *brevicostalis*, 317
„ *candida*, 272, 316
„ *diversa*, 317
„ *drona*, 316
„ *hecabe*, 272, 316, 317
„ *lacteola*, 316
„ *læta*, 272
„ *libythea*, 316
„ *photophila*, 272
„ *sulphurata*, 272
„ *zoraide*, 316
Terminalia, 292
* „ *argyrophylla*, 291
„ *chebula*, 292
Tetralia, 76, 217, 223
„ *carimana*, 224

Tetralia glaberrima, 223
„ *heterodactyla*, 224
„ *lævissima*, 224
„ *nigrifrons*, 224
Thecla ilias, 265
THIIDÆ, 69
Thymèle thridas, 321
Thysonitis apollonius, 266
„ „ var. *supous*, 265, 266
„ *cælius*, 267
„ *hermes*, 266
„ *illustris*, 266
„ *korion*, 266, 267
• „ *triopus*, 265
Tirumala hamata, 254
Trapa, 11, 12
Trapezia, 76, 217, 223, 225, 226, 229
„ *acutifrons*, 222
„ *areolata*, 218, 221
„ „ var. *inermis*, 221
„ *cæruba*, 219
„ *cymodoce*, 218, 219, 220, 221, 222, 223
„ *dentata*, 219
„ *digitalis*, 218, 222
„ *ferruginea*, 218, 220, 221, 223
„ „ var. *areolata*, 221
„ „ „ *guttata*, 220
„ „ „ *intermedia*, 220
„ „ *areolata*, 221
„ „ *maculata*, 221
„ *fusca*, 222
„ *glaberrima*, 224
„ *hirtipes*, 219
„ *integra*, 223
„ *intermedia*, 218
„ *leucodactyla*, 222
„ *maculata*, 218, 221
„ *miniata*, 220
„ *reticulata*, 221
„ *rufopunctata*, 218, 222
„ „ var. *intermedia*, 220
„ „ „ *maculata*, 221
„ *serratifrons*, 224
„ *subdentata*, 220
„ *tigrina*, 221
TRAPEZIOIDA, 177, 217
Trevesia, 43, 57
„ *palmata*, 57
„ „ var. *lium*, 59
Trichosanthes, 24, 26
„ *anguina*, 29
„ *aspera*, 29
„ *bracteata*, 29
„ *Celebica*, 27, 30
„ *cordata*, 29
„ *costata*, 32
„ *cucumerina*, 26, 27, 32
Trichosanthes dioica, 26
„ *Fatoa*, 32
„ *grandibracteata*, 30
„ *grandiflora*, 26
„ *Hearni*, 26, 28
„ *herpetospermum*, 28
„ *heteroclita*, 26
„ *hexasperma*, 26
„ *integrifolia*, 32
„ *laciniosa*, 27, 29
„ *macrocarpa*, 26
„ *multiloba*, 30
„ *officinalis*, 32
„ *palmata*, 27, 29
„ *pilosa*, 27
„ *pubera*, 29, 30
„ *reniformis*, 28
„ *tricuspidata*, 27, 28
„ *tricuspis*, 29
„ *Wallichiana*, 27, 29
„ *Wawræi*, 27, 30
Tripodanthera cochinchinensis, 32
Troides oblongomaculatus bouruensis, 318
„ *priamus poseidon*, 273, 274
„ „ „ ab. *hecuba*, 273
Tupidanthus, 43, 63
„ *calyptratus*, 63
Typhonium, 302, 303, 304
„ *cuspidatum*, 304
• „ *inopinatum*, 301, 302, 303
• „ *Listeri*, 334
• „ *Pottingeri*, 304
„ *Rozburghii*, 302, 303
• „ *Schottii*, 303
„ *trilobatum*, 302, 303
UMBELLIFERÆ, 1
VACCINIACEÆ, 296, 297
Vadebra, 256
„ *eurypon*, 255, 257
„ *melina*, 309
Vanessa hedonia, 312
Vitis atroviridis, 40
„ *trichophora*, 40
• *Wardenia*, 43, 60
• „ *simplex*, 60
XANTHIDÆ, 67, 69, 70, 71, 77
XANTHINÆ, 70, 77, 78
XANTHINI, 69
Xantho, 74, 90, 91, 112, 114, 115, 116, 117, 123, 125, 127
„ *affinis*, 119
„ *bidentatus*, 92, 113, 114
„ *cavipes*, 122
„ *crassimanus*, 120, 121, 122
„ *deHaanii*, 162
„ *distinguendus*, 113, 123
• „ *euglyptus*, 121
„ *exaratus*, 118, 120
„ „ var. *crassimana*, 120
„ „ „ *nudipes*, 121

Xantho exaratus, var. *sanguinea*, 120
" " " *typica*, 119
" *floridanus*, 117
" *floridus*, 112, 114, 116
" *granosomanus*, 157
" *granulosus*, 101
" *hirsutissimus*, 141
" *impressus*, 91, 112, 113, 115
" *incisus*, 107
" *lamarckii*, 157
" *lamelligera*, 108
" *lividus*, 119
" *macgillivrayi*, 113
" *nitidus*, 108
" *notatus*, 158
" *nudipes*, 121, 122
" *obtusus*, 83
" *octodentatus*, 106
" *peronii*, 150
" *punctatus*, 91
" *quinquedentatus*, 122
" *radiatus*, 108
" *rufopunctatus*, 142
" *sanguineus*, 119, 120, 121
" *scaberrimus*, 112, 113, 116
" " var. *baccalipes*, 117
" " " *cultripes*, 117
" *spinosus*, 150
" *superbus*, 107
" *tahitensis*, 92
" *tuberculatus*, 114
" (*Eudora*) *impressus*, 113
" (*Lachnopodus*) *tahitensis*, 92
" (*Leptodius*) *cavipes*, 122
" " *crassimanus*, 120, 121, 122
" " *euglyptus*, 121
Xantho (*Leptodius*) *exaratus*, 118, 120
" " *nudipes*, 121, 122
" " *sanguineus*, 119, 120, 121
" (*Lophoxanthus*) *scaberrimus*, 113, 116
" " " var. *baccalipes*, 117
" " *scaberrimus*, var. *cultripes*, 117
Xanthodes, 74, 156
" *granosomanus*, 157
" *lamarckii*, 156, 157
" *microps*, 128
" *notatus*, 156, 157, 158
XANTHODIOIDA, 78, 156
XANTHOIDA, 77, 112
Ypthima arctous, 257
" *asterope*, 311
ZANONEÆ, 25
Zanonia, 25, 40, 42
" *cissoides*, 40
" *Clarkei*, 41
" *indica*, 41, 42
" *lara*, 40
" *pedata*, 40
" *sarcophylla*, 42
Zizera, 265
" *gaika*, 264
" *otis*, 264
ZOZYMOIDA, 77, 94
Zozymus, 72, 94, 99, 103, 106
" *aeneus*, 104
" *canaliculatus*, 84
" *pilosus*, 104, 105
" *rugatus*, 84
" *tomentosus*, 140

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I.—*On Taboo and Customs connected therewith amongst the Santals.*—By P. O. Bodding, Mohulpahari, Santal Parganas.

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Tabooing of names.

There is a peculiar custom observed by the Santals, in some respects apparently resembling what is called *ukuhlonipa* amongst the Kafirs in South Africa, the *te-pi* of the South Sea Islanders, and the *hwui-ki* of the Chinese.[1*]

The custom is this: Certain brothers- and sisters-in-law and husband and wife are amongst the Santals prohibited from mentioning each other's names, and this rule is observed, not only when they are speaking to or of each other, but always when they may have to mention these particular names.

The relatives who are bound by this custom are the following:

Group A. *Bahoñharea.*[2] [1] A man (*a*) and the wife (*b*) of his younger brother; [2] a man (*c*) and the wife (*d*) of his wife's younger brother.

Group B. *Ajhnarea.* [1] A woman (*e*) and the husband (*f*) of her younger sister; [2] a woman (*g*) and the wife (*h*) of her younger brother.

Group C. Husband and wife.

All of these are prohibited from naming each other's names under any circumstances. There is, however, a very great difference between

* For foot-notes see p. 16 *et seq*

the two first groups and the last, so they cannot well be treated of together. We shall therefore in the following first examine the two first groups separately and afterwards deal with the last group.

Groups A and B.

In the Santal community cousins, in as many degrees as they can keep any account of each other, are also considered to be brothers and sisters; hence the rule is extended to them also. Their mutual age is decisive of their family position (*i.e.*, as younger or elder brothers and sisters), not their being children of elder or younger brothers, as far as regards what is treated of in these lines.[8]

It must further be borne in mind, that this custom is generally strictly observed with regard to the real name only, but not always so with regard to the second and commonly used name (called *bahna* by the Santals in opposition to the *mul*, real, original name). This *bahna* name is, however, never mentioned in the presence of the relative, and those who will "honour" their relatives abstain from mentioning the second name also under all circumstances.

As long as these relatives are within the family or have to speak to or of each other, they meet no difficulty from this custom. Speaking to each other they have certain appellatives which are always used (*viz.*, *a* to *b*, *c* to *d*, and *g* to *h* the word *bạhu*, *i.e.*, daughter-in-law; *f* to *e* and *h* to *g* the word *dại*, *i.e.*, elder sister; *b* to *a* and *d* to *e* the word *gọ*, and *e* to *f* the word *bạbu*, *i.e.*, boy or young man).

Speaking of each other they have a special name for every particular relative, which is always used (*a* and *c* are the *bahọñhar* of *b* and *d* respectively, *b* the *bọkọt-bạhu* of *a*, *d* the *erveltẹt' bạhu* of *c*, *e* and *g* the *aj̃hnar* of *f* and *h* respectively, *f* the *bọkọt jāwāe* of *e*, and *h* the *bọkọt bạhu* of *g*).

The difficulty arises, when they have to mention other people, things, animals, villages, etc., bearing the same name as one of these particular relatives, or part of the name of which is identical with the name of this person.

They will then proceed as follows: When speaking of persons they will describe them in some way or other, for instance as brother or sister, etc., of such and such a person, or say, that he or she has the same name as this or that person. If this is not possible, they will plainly say, that the person in question bears the same name as this or that relative, and, if necessary, request a person present to tell the name.

A result of this custom will be seen from the following: The Santals are accustomed to name their children after their parents and the relatives of these, commencing with the paternal grandfather or

-mother of the child.[4] Should it so happen, that the father or mother of the child has a not-to-be-named relation bearing the same name as that to be given to the child, the child will get the name—it is named by the midwife to those present at the name-giving festival, which is celebrated three, five (or seven) days after the birth[5]—, but they will at once commence to use a second name (*bahna*), either something like the real name in sound, a name signifying a certain quality observed in the child or taken from the day on which the child was born, etc. In this way the parents may by this custom be prohibited from naming the real name of their own offspring. With women it may even happen that this custom prohibits them from naming their own names.

Any other near relative than the parents will also for the same reason in the same manner give a child a *bahna* name, and there are in fact very few Santals who have not in this way got a second name.[6] If he (or she) has got such a one, this is always used, and if asked what his name is, he will himself constantly mention the second one, if he is not specially requested to name the real one. They will even sometimes affect having forgotten the real name.

When the name originally signifies things or animals or is part of a village name, etc., they will as a rule here either describe the thing or animal, etc., in some way, name something like it or name it outright, if the relative in question is not present. It is, however, not considered proper to do the last, and is done only by the "degenerated" Santals of the present day.

I shall give some instances of how they try to manage the difficulty. We have here in the village an old woman, the name of whose younger sister's husband is *Lokhon*. In the vicinity is a village called *Lokhonpur*. This, of course, she cannot pronounce, but calls the village *Lopak'pur*, or *atopur* (*ato* being the Santal name for village), or she will describe it as the village in which such and such a person is headman, or which is on the other side of a certain hillock, etc. Another time I heard the same person speak about the two heroes in the Santal version of Râmâyana as *Ramtikin*, *i.e.*, Ram and his companion. She was not to be induced to name *Lokhon* (Lakshmana).

Once I heard a person, the name of whose younger brother's wife is *Hira* (*i.e.*, diamond) call diamond *jiramanik*. *Manik* is the Santal name for a pearl, which a Santal will consider about equal to a diamond, and may perhaps also be used as a general name for a jewel, the probability being that the average Santal will know nothing of either *hira* or *manik* besides that they are names for jewels[7]; by putting *jira*, which means cummin seed and in sound resembles *hira*, before *manik*, he would make us understand that he did not mean a real *manik*, but

a *hira*—and all did so understand it, because all knew his reason for speaking thus.

All examples that could be brought forward are individualistic, and have not, as far as can now be ascertained, had any influence on the vocabulary of the Santal language.

The custom is observed also in the case that the relative dies, and formerly—according to what old women say, and they are the best authorities in such matters—they conformed to the custom, even when a not-to-be-named relative had died as a child, long before the parties in question came into relationship to each other by marriage. Old persons still living sometimes do so yet; but the younger generation has "degenerated." "We have not even seen them, and if we name such a name, what follows?" they say, and use the name.

When it is absolutely necessary, the name may be mentioned, now-a-days; but the person so doing takes the precaution to spit before pronouncing it. If he (or she) should unawares happen to mention the name, he must spit afterwards. The spittle is by the Santals, as by most other people, considered an unclean thing, and spitting on anybody or anything conveys the same idea of insult and contempt as amongst Europeans. By spitting they will signify, that what they are going to do or have already done is a bad and damnable thing, it at the same time being understood that they are not going to make a practice of what they have done or will do, not more so than anyone will without necessity touch the unclean saliva.

With the above-mentioned exceptions they keep very strictly to the custom, even when they are amongst complete strangers or people of another *jat*, considering the breach of it a great sin which will be punished both here and in the next world. They expect that God will curse such people by giving them some kind of sickness (*e.g.*, leprosy) or infirmity. When dead, they believe, the bodies of such people will not burn, to effect this they will have to cut them into pieces, as they say; neither will they come to a good place in the other world but to *nərək*, *i.e.*, hell; they will, for instance not get any water to drink there; neither will anybody give them fire to cook their food with; some say, they will stick in nightsoil up to their necks; their body will be eaten by worms, etc.

If a Santal does not conform to the rules in question, he will be severely punished. It is, for instance, sufficient cause for divorce.

Only a short time ago I have thus seen a wife, although she was enciente at the time, divorced from her husband on account of her not "honouring" his elder brother in this way.

Should it happen, that such relatives had intercourse with each

other, they will mercilessly be "outcasted," and even if they are subsequently again taken into "caste," the Santals feel disgust towards such people.[8]

The now living Santals consider this custom as a special manner for the relatives mentioned *honouring*[9] each other, or more specially, showing that they consider each other sacrosanct to each other. They say, that these male relatives honour their female ones, as they honour a *boyga*, and the female ones honour the men like *Cando*,[10] the Sungod, the Creator and Ruler of all things. Now it must be remembered, that *Cando* by the Santals is considered good, but, of course, unapproachable as the sun in the sky. The *boygas*, on the other hand, are mostly evil spirits who in many ways try to harras the Santals, and whom they therefore try to keep as much as possible at a distance and to appease by sacrifices. The comparison is significant enough and does not need any commentary.[11]

According to Santal notions this custom of course is mutual honouring;[12] but as there is a pair of relatives which would come within Group A (*bahoñharea*)—both men, *viz.*, a man and the husband of his younger sister,—who do not observe this custom, although they have other customs in common with the relatives treated of here (cfr. what is written below), and as other relations,[13] between whom an analogous or even greater honouring ought to be observed, do not observe this custom, it seems clear that this kind of honouring has not been invented for the sake of honour alone, but has a deeper cause. What is then the probable origin of this kind of taboo?

To get an understanding of the case we must see what is the mutual position of the parties, and their position in the family.

Besides not naming one another's names these relatives have various customs to observe with regard to each other.

The woman within both groups has in the presence of this kind of male relatives to observe the following rules:—

She is not to sit on a bedstead in his presence,—she may sit on something else; she must then, however, take particular care that she has her clothes decently arranged round herself; many Santal women are not over particular in this respect. Generally the woman will stand or go away out of the presence of the male relative. During the night the woman is not to lie on a bedstead, if the male relative is sleeping in the same room; she may, however, lie down on anything else, the floor, a mat, etc., usually she will take her bedstead to another place or outside, where she is hidden from the male relative, and lie down on it there.

She must not under any circumstances touch the bedstead or clothes belonging to the male relative, whether he is present or not,

whether he has the clothes on or not. This is carried so far, that for instance the wife of the younger brother is not allowed to touch the wife of the elder brother, if this woman is carrying clothes belonging to her husband, and she is under the same circumstances not even allowed to help the other to get a burden on her head, as she might then come in contact with something belonging to the husband of the elder wife. The same rule which is observed with respect to clothes and the bedstead is, as a rule, although probably not so strictly, applied to all things which this male relative carries on his body, rings, necklaces, etc.

The woman must, of course, not touch the man himself, wherefore she cannot, for instance, perform the Santal custom of washing his feet, when he comes on a visit. If there is no other woman present to do it, he must do it himself or let his feet be as they are, which under all other circumstances would have been considered a very great offence to the household to which he has come on a visit.

She must not loosen her hair, neither must she let anybody free her of lice in the presence of this relation. She must—if unmarried, otherwise they do not heed it much—keep her clothes well covering her breast in his presence, and she must not climb a tree or mount a ladder, etc., when he is near. If, for instance, two brothers with their wives are going somewhere and have a bullock cart with them—their only mode of travelling when not walking,—the wife of the younger brother is not allowed to mount the cart, even if the elder brother is himself walking.

She cannot sit on the same mat with him or by his side; she must not touch his shadow (because it belongs to him); if the man is treading the *ḍhiŋki*, she must not keep the paddy or rice in the stamping hole; and she must not eat or drink anything left or touched by him or his wife[14] (because her husband—eating before her—is supposed to have or may have touched her food. The Santal wives are in the habit of eating what is left by their husbands).

If she should unawares sit on his bedstead, touch anything belonging to him, etc., she must at once when it is pointed out to her, wash or pour water on herself, and what she has touched belonging to him.

The male relative on his side may sit or lie on a bedstead, though not on hers, in her presence; but he must not touch her or her shadow, her bedstead or her clothes or anybody carrying anything of her wearing apparel. If, for instance, two brothers are walking together, the younger one carrying the clothes of his wife, and they feel inclined to chew tobacco-leaves and lime mixed together--which the Santal men do the whole day,—the younger one must, if he mixes the ingredients,

put the clothes down somewhere in the meantime; if the elder one does it, he must not touch the hand of the younger one when giving him the tobacco—it is otherwise on account of its dusty form given into the hand,—but must let the stuff fall into his younger brother's hand.

He must not tread the *ḍhiŋki* for her, nor sit by her side, specially not on the same mat. What else he from courtesy should not do, will be seen from what is said about the woman. Even when one of the parties is dead, they are prohibited from touching the dead body. Before the Santals burn their dead, they are in the habit of washing their hands, feet and mouth, put *sindur* on their forehead, etc.; all relatives present must do this; but these relatives are, when doing so, prohibited from touching the body. Something of what they else would have to do, they must abstain from. Instead of washing the dead body, they pour water from a cup on it, to avoid touching it.

The Santals, when grown up, never eat or touch what their women have eaten or drunk from; but that the rule with regard to food and drink, which is observed by the woman, in the opposite case would have been applied to the man, is apparent from the fact that in case the two *bahoñharea* (Group A) are males (see above) they observe the rule with regard to each other which without such a rule would not have been necessary.

If he should unawares touch her—which may sometimes happen, for instance when there is dancing in the village, or he has got a little liquor on board,—they must take water in a cup, pour it over each other and then salute each other, just as they do at the time of the marriage of one of the parties, when this relationship is established.

As the woman would feel very much ashamed if the male relative should see her in any of the prohibited situations, he will, when coming home, or to where he supposes her to be, as a rule in some way or other make his presence known by coughing, etc., before he enters the court-yard or the house, and not at once go straight in, allowing the woman time to take her precautions. Such consideration might seem strange with an uncivilized people like the Santals; but it is not their only trait of this character.

If these relatives voluntarily break these rules, it is a great sin which they believe will be punished as mentioned above in case they should name each other's names. They believe that the part of the body with which the rule is violated, will specially suffer both here and in the coming world, be eaten by worms, etc. I have heard them tell many instances of such people having already in this life lost their hands, got leprosy, etc., as they fully believe, because they have violated these rules.

All these customs are not observed by the second pair in Group B (both women), an account of whom will be given later on.

It will be seen, that all these rules prescribed by custom have one essential quality: they are to prevent the relatives in question from seeing each other—or rather the man from seeing the woman, which is quite natural—in any too familiar position, and from indulging in any familiarity towards each other; instead of which these relatives must treat each other as complete strangers, even the names of whom they, so to say, are not to remember. Complete strangers are not so particular in their behaviour towards each other. One might be tempted to say, that it looks as if they should not have any bodily existence for each other.

The deeper cause of the custom hence seems to be the wish to prevent these particular relatives from being even tempted to sexual sin with respect to each other.

But what can be the reason of this? For while a Santal honours the wife of his younger brother in the manner described, quite the contrary is the custom between the younger brother and the wife of the elder brother. These may laugh and jest with each other; they have not any restrictions imposed on themselves by custom or otherwise, when in the company of each other; and should they go further, nobody seems to heed it. In fact, the wife of the elder brother is considered a kind of common property between him and his younger brothers. It is regular polyandry.

And while a Santal must behave as described towards the elder sister of his wife, there exists very much the same freedom between him and the younger sisters of his wife as between his own wife and his younger brothers.

From these two facts it is clear, that the reason cannot well be, that the parties should be considered to have come into the relationship to each other of brothers and sisters, and that any familiarity for the sake of that should be prohibited in this way.

The explanation will, as I believe, be found, if we cast a glance on the position of the parties in the family.

The first thing to be taken into consideration is the basis of the Santal matrimony, *viz.*, the rights of property of the husband. A Santal buys his wife, or rather the father buys wives for his sons, if he is living; and that this is real business is shown by many circumstances of which I—besides the fact that a bride-price is paid [15]—shall mention only one.

When at the marriage the bride has been brought to her future home, and her friends and relations are going to take leave, the *lumti*

budhi[16] says to her: "Now remain, my girl; this is your house, this is the place where you shall go out and in. Work and eat ye industriously. Don't long for us; this is your house (or home) for life. *Both bones and ashes did we sell you.*" The meaning of the last expression is, that both living and dead she shall thenceforth belong to her husband, whose property she is.

When she becomes the property of her husband, his younger brothers, because they stand in a *quasi*-filial relation to him (cfr. what is written below), seem also to get some rights in her together with him. A result of this is probably the circumstance mentioned above, that the younger brothers are allowed such liberties with the wife of the elder one, and another custom, that in case the elder brother dies, the younger brother—if he wishes, it is not enforced—takes the widow as his wife (or co-wife, if he has one before), without, however, going through any marriage ceremonies. They have paid for her before, they say; she belongs to the family.

On the other hand an elder brother has as his duty to protect what belongs to a younger brother and to provide for him. He is therefore also prohibited from marrying the widow of his younger brother. In case the younger brother dies, the widow may stay in the family of her late husband, if she has any children, because if she leaves, she must also leave these behind her, as they, according to Santal law, belong to the relatives of the father, who also are the heirs in case there is no (male) issue of the marriage. She then stays as the mother of her children, who have to support her. If she has no children, the relatives of her late husband will send her back to her parents or nearest relatives, as soon as the funeral ceremonies have been performed; it would be contrary to custom if she remained.

It will be seen that the widow of a younger brother is considered almost as a piece of masterless goods in the family of her late husband. She was bought to work for him and to make him comfortable; now she is of no use any more in the family, but would become an unnecessary burden and expense; she is therefore sent away. If she marries again—in case she is young, her relatives will try to marry her away, as they do not like to have a single woman in their house, probably because they doubt the chastity of such a person, specially that of a widow—the people in whose ward she is will get the bride-price paid for her.[17]

Further, an elder brother, especially the eldest one, is looked upon as the representative of the father, and is after the death of the father the head and governor of the family. From this cause there are, in fact, some Santals who look on the wife of their eldest brother as equal to

their mother and pay her respect accordingly. But it must be borne in mind, that this is only individualistic and not the general custom. I mention it only to show the feelings of the better Santals towards their elder brother, specially when there is some considerable difference in age between them.

In case the father is dead, an elder brother manages, as said, the affairs of the household, and will have to buy the wife for his younger brother.[18] The result of this position of an elder brother is, that he is considered legally equal to a father-in-law of the wife of his younger brother. That this is so, is shown by the following facts:—

An elder brother is called the *bahoñhar* of the wife of his younger brother. It is not necessary here to discuss the meaning of *ba-*, which is not to be connected with *baba* ("father," mostly used in addressing), but with a name for brother;[19] it is sufficient to point out, that *hoñhar* means father-in-law. Sometimes women may even be heard speaking of their *bahoñhar* as simply *hoñhar*.

The woman is called by the elder brother, *boko̱ñ* (*boko̱m*, *boko̱t*) *bo̱hu*, (*i.e.*, the wife of my (your, his) younger brother) and addressed as *bo̱hu*, daughter-in-law.[20] Used as a term of address *bo̱hu* means only daughter-in-law. A man thus cannot address his wife as *bo̱hu*. The parents-in-law address their daughter-in-law in the same manner (*bo̱hu*).

The parents-in-law address their children-in-law by "you two" (in the dual) when speaking to only one, and speaking of themselves they also use the exclusive dual "we two" (*i.e.*, he (or she) and I), not "I;" the children-in-law follow the same custom towards their parents-in-law.[21] A man and the wife of his younger brother observe the same custom.

When all this is taken into consideration, the origin of the custom, so far as regards the first pair of Group A, would seem to be found in the wish to *protect the property of the weaker* brother against any encroachment on the part of the stronger (*i.e.*, elder) ones, who, moreover, have the duty to protect the younger one, and in order to effect this all that could in any way facilitate or tempt to such an encroachment, is obviated.[22]

As remarked above, all familiarities are excluded, all possibilities of a legal connection or marriage at any time are done away with, and the parties are, so to say, theoretically obliterated from the memory of each other. Seen in this light there might have been considerable danger in the elder brother being allowed to marry the widow of the younger one.

It is not likely that the custom should have originated in a wish to establish the authority of the elder brother. This is done by his being

put down as a kind of father-in-law of the woman. If such had been the case, the authority would probably have been extended to the wife of the elder brother also, and children of brothers could not well have been counted brothers and sisters.

It now remains to be seen whether this explanation can be applied to the other pairs who observe this custom, and among whom one pair comes under Group A, *viz.*, a man and the wife of the younger brother of his wife (*c* and *d*).

The man in this pair (*c*) and the husband of the woman (*d*) are what the Santals call *teñaea*,[23] which relationship according to Santal ideas is *landa saŋgi*, [24] *i.e.*, a relationship where the parties may laugh and jest together, as remarked above, and are what we would call great friends. (*Teñaea* are not considered as brothers and sisters, which is seen from the circumstance that there is nothing to hinder a man from marrying the younger sisters of his wife, in fact, it is not an uncommon occurrence).

When *landa saŋgi* exists between men and women who are not consanguineous, sexual intercourse is tolerated (in the two first classes mentioned in the note).

Now it is clear that there might be great fear that the intimacy going on between the two men (*c* and husband of *d*) might be extended to the wife of the latter. In order to prevent this, the custom may very likely have originated. Here again then we find the same origin: protection of the property and rights of a younger and weaker relation, the more so as the men mentioned have nothing in common with regard to property or inheritance.

When the man (*c*) has been called the *bahoñhar* of the woman (*d*), the cause of this is most likely to be found in the circumstance that the wife of *c* legally is the *ajhnar* of *d* (*vide* what is written below about the *ajhnar*).

We shall now proceed to examine how the custom is to be explained in Group B.

The external difference between the two groups is this, that while in Group A the male relative is the elder one, in Group B it is the female relative who has the higher position in the family scale.

What was remarked above with regard to the elder brother, may, *mutatis mutandis*, be applied to an elder sister. She has amongst the Santals constantly to carry about and nourish her younger brothers and sisters, and with few exceptions to do a mother's work. She is therefore looked upon with much regard, almost equal to the regard shown to a mother.[25]

On account of this position of an elder sister in the family it is

natural that she, when her younger brothers or sisters marry, is considered equal to a mother-in-law of the husband of the latter and the wives of the first.

This is shown, as I believe, by the name given to her position, *ajhnar*,[26] further by the various peculiarities mentioned above as being observed by parents- and children-in-law, which are also observed by the *ajhnarea*. The parties address each other in the dual and speak of themselves in the same manner. The only difference is, that the *ajhnar* is addressed as *dai*[27] (elder sister), whilst the mother and mother-in-law are addressed as *go* or *ayo* (mother); but the *ajhnar* herself addresses the other parties as a mother-in-law would do.

In this way the authority of the elder sister and *ajhnar* is established; but it seems not here, any more than with the pairs in Group A, possible to think, that the custom of not naming each other's names should have been invented for the sake of keeping up honour and authority for the reason already mentioned, that we should then expect the same custom to be observed by other relations.

The only reasonable explanation seems to be found in the sexual relation of the parties, *viz.*, to prevent the possibility of any familiarities between these relatives by keeping them away from each other.

Here again we meet a similar obstacle as with the pairs in Group A, *viz.*, that great liberty exists between the man and the younger sisters of his wife, a fact which seems to be explained by the man having, when buying his wife, got in addition some rights towards her younger brothers and sisters. It would be of considerable interest to find out why this is so.[28]

When such is the case, why should he not also get the same rights towards the elder sister? The explanation seems again to be found in the idea of the wife being the property of her husband. It must be remembered, that amongst the Santals (as amongst the Hindus) the custom is, that the daughters are sold away in marriage according to age. The elder one is sold first, afterwards the turn of the younger ones comes.[29]

But in this case the rights of property towards an elder sister have already been disposed of at the time of the marriage of the younger sister. Here it cannot be a wish to protect the rights of a weaker one, but to preserve the rights of the first "buyer" uninfringed, and possibly to keep the younger man out of trouble with the elder one, if he should be inclined to be as friendly to his *ajhnar*, as the husband of this one is towards his (the younger one's) wife.

It is now left to seek an explanation of the reason why the second pair in Group B should observe this custom. They are both women (a

woman and the wife of her younger brother), and do not observe all the customs ordered for the parties, when they are of different sex (cfr. what is written above).

The rules which this pair have to follow towards each other, besides not naming each other's names, are only the following:—

The younger one must not touch the elder one on the body, the only exception being, that she is allowed to take the elder one by the hand; the reason for this given by the Santals is, that otherwise they would not be able to dance together. The elder one may give the younger one massage, help the younger one to get a burden on her head, to get a thorn or the like out of her foot, etc.—all these are examples given by the Santals—but the younger one is not allowed to do any such thing towards the elder one. Otherwise they have not, so far as I have been able to ascertain, any other restrictions imposed with regard to lying, sitting, bedsteads, clothes, etc.

I must confess, that so far as this pair is regarded, it is difficult to get a satisfactory explanation, as in this instance the rights of property of any one cannot, directly at least, be violated.

The husbands of these two women are *teñaea*, and I have above tried to show, why the husband of the elder woman and the younger woman have been made to observe this custom.

The only explanation I am at this time able to think of, is that, while the elder woman naturally is the *ajhnar* of the younger one, the custom of not naming the names of each other has been imposed on them in order to make the distance between the husband of the elder one and the younger woman absolutely safe here, where the dangers of the *landa saŋgi* exist between the husbands.

As corroborating this some of the customs mentioned above as observed by the wives of two brothers and by the two brothers themselves may be cited; it will also be seen, that the various customs mentioned above tend to keep the younger woman away from the elder one; it would be unnecessary to impose these restrictions on the elder one, because she is the sister of the husband of the younger woman.

That in this case the custom of not naming the names of each other should have been imposed from analogy only is not likely. Then we should expect the same custom to be imposed on the two male *bahõ-harea* (*viz.*, a man and the husband of his younger sister). These two mention the names of each other and in most things behave towards each other very much as a father- and son-in-law. The wives of these two are *hiliyea* (*landa saŋgi*); but it seems as if the elder one is thought capable of defending his rights without any special precautions being taken; and as the wife of the younger man is the sister of the elder one

there is no danger there. That these two male *bahgũharea* do not observe the custom treated of, could be cited as corroborating the hypothesis given.

Concerning *Group C*, husband and wife, we may be short. They avoid naming each other's names very much in the same way as the parties within the two previous groups. When calling on each other they have not, however, any particular relationship-name to use and must manage it in some other way. When they have got children, they always use the term of father (or mother) of one of their children; if not, they call on each other by naming each other as such and such a relative of (generally) some child or other, *e.g.*, uncle or aunt of A.

On my asking a Santal, how they would manage it, if there were no such relations, I got the answer, that such will never be the case, at least Santals had never heard it. If the husband had no relatives, the wife would have and *vice versa*.

It is clear that the custom must be of quite another nature and origin here than within the two other groups. The Santals describe the difference negatively by saying, that if husband and wife break the custom, it is only dishonouring each other, but if any of the parties within the other groups do not observe it, it is sin, which is punished both in this and the coming world. Husband and wife are according to their belief punished for breaking this custom by their children becoming deaf; but personally they will not suffer in this or the other world. As may be expected, they are not so strict in observing the custom as the other parties, and as the time goes, they will probably give it up.

The now living Santals are not able to tell anything with regard to the origin of the custom, and there is nothing, so far as I know, which might indicate another explanation than that the custom has been imposed on husband and wife to cause them to "honour" each other in this peculiar way.

But taking all circumstances into consideration this explanation does not seem to be sufficient. It might be, that the custom in this case has originally been borrowed from the custom prevalent amongst the Hindus, that a wife is prohibited from naming the name of her husband, and that from various Santal peculiarities, of which it is necessary to point out only the social and family position of a Santal wife, the custom has been made obligatory also for the husband.[30]

As a postscriptum I may mention that this custom of not naming each other's names is observed with regard to the first pairs within Groups A and B, and with regard to husband and wife by the *Mahles*,[31]—

perhaps not so strictly as by the Santals,—and I believe also by some of the low caste Hindus living here in the country. The custom as far as regards the two first groups are doubtlessly of non-Aryan origin.

Other kinds of taboo.

Besides the above mentioned more or less strict tabooing of names of people and *boygas*, the Santals also taboo certain places, things and animals, about which some few words should be added.

The Santals are divided into twelve totemistic septs, bearing the names of some animal, tree, plant or thing, and in one case the constellation Pleiades; most of the septs are again divided into subsepts; the Santals, although not in all cases, in some way or other taboo what has given their respective septs their names—as a rule it is only the subsept called *nij* (*i.e.*, real) *e. g.*, *hāsdak'*, *murmu*, etc., which taboo the animals, plants, etc. ;—the same practice is in some cases also followed with regard to the names of the subsepts. They are prohibited from killing or eating the animals, from cutting, kicking or in some special way using or cultivating these particular trees, plants or things. Some of the subsepts are prohibited from building and using special kinds of houses, and using a certain kind of palanquin in which to carry the bride and bridegroom; some of them are not allowed to enter a house where a child has been born or a person has died, while some others may do it; some of them are prohibited from carrying the bodies of dead persons or at least from lifting them up on the funeral pile, sometimes even in case one of their own family has died; other kinds of taboo are also imposed on some of the subsepts.

It would be of some interest to examine this kind of taboo in detail; but as there is a good deal to be said in connection therewith, it would lead too far to do it here, and it had better be reserved for a separate paper on the subject. The names of the totems and subsepts are given nearly correctly in Mr. Risley's work, "The Tribes and Castes of Bengal." It is a pity that the vernacular names in that work are not written according to some better phonetic system, or in, *e.g.*, Dēvanāgarī characters. Some of the names are not easily recognizable.

All other kinds of taboo are almost exclusively connected with their spirit worship.

All sacrifices are taboo for the women, *i.e.*, they are forbidden from being present when the sacrifice is actually made, except when the rite is performed in the house (*i.e.*, sacrifices to the ancestors and family gods), this also only in case there are no men to help the sacrificer. When a sacrifice is offered in the holy grove or somewhere else outside, the women are forbidden even to eat flesh of the sacrificed animal; what the men are not able to eat, they burn. There are some very few

exceptions to this rule, specially with regard to the wife of the village-priest.

When the sacrifice is made in the house, the women may eat of the flesh of the animal sacrificed to the ancestors and family gods, not, however, the head, which is cooked together with rice and eaten by the men, and not of an animal sacrificed to *Maraŋ buru*.

The men may eat of any sacrifice offered to the national deities common for all, with the exception that when the sacrifice is offered in the holy grove, only the village priest can eat the head; further they can eat what is offered to the ancestors; but when a sacrifice is made to an *abge boŋga* or to the family gods, only men of the same totem—not even all these—or having the same *abge*, etc., can eat the flesh; all other men are excluded.[2]

Further: no woman is permitted to climb the consecrated trees in the holy grove; in such a case the gods in question must be appeased by sacrifices.

No woman belonging to another household, in most cases not even a daughter of the house, if she is or has been married, is allowed to enter the *bhitar*, a small closet inside the house separated from the other part of the room by a low wall, where the family gods and ancestors are supposed to reside, and where offerings are made to them and *Maraŋ buru*. If anybody breaks this rule, they must give sacrifices; the reason given in both instances is, not that the trees or *bhitar*, but that the *boŋgas* have been polluted, and will, if not appeased, revenge themselves by sending sickness and death.

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[1] The Santal words in this paper have been spelt in conformity with the system of transliteration adopted by the Society. The Santal language has, however, some sounds which are not found or have no peculiar letter in the Dēvanāgarī alphabet. Amongst these the following occur in this paper: *a*, a neutral guttural a, which has no corresponding sound in the Western European languages so far as I know; *ā*, the German ä; *o* pronounced like English a in *fall* or o in *not* (short or long); *ọ* a neutral o, and *k'* which is "pronounced by sharply inhaling the breath and quickly closing the throat below the guttural point, by which the breath is suddenly stopped, and on reopening it, allowing the breath free passage through the mouth" (Skrefsrud, "Sant. Grammar"); *t'* is an abrupt *t*.

I trust I may be excused in that I have given rather more of the Santal customs than is strictly necessary for the sake of argument.

[2] I take this opportunity of pointing out a peculiar Santal collec-

tive-termination. This termination-*ea* is mostly used in words signifying relatives, and then to signify, not two or more persons having the same position in the family, but *pairs of relatives*, viz., a person and he, she or they, who stand in such a relationship to him (or her) as to call on him (or her) by the name of the relationship-position given to which the termination is added. It is to be noted, that in case one of the relatives within the pair has a higher position in the relationship-scale, the termination is used only in connection with the name for the person in the higher position, and not at the end of names signifying a lower position in the relationship-scale. I have heard exceptions, but they are not considered correct language by the Santals themselves. *E.g.*, *Hiliyea* (*y* is euphonic to avoid hiatus) means the *hili* (elder brother's wife) and the younger brothers and sisters of her husband, who call her their *hili*. *Dadaea* are the eldest brother (*dada*) and one or more of his younger brothers. *Balaea*, coparents-in-law, from *bala* (*-ñ,-m,-l*) one of the parties. *Hiromea*, the two or more wives of a man. *Bahoñharea* are the *bahuñhar* and the wife of his younger brother or the husband of his younger sister, or the wife of his wife's younger brother. *Ajhnarea* are the *ajhuar* and the husband of her younger sister or the wife of her younger brother. The termination is mostly used as a dual.

Besides at the end of these relationship names, *-ea* is very little, if at all, used. It is most likely the same *-ea*, which is found in three Santal numerals (*barea*, besides *bar*, two, *pea*, besides *pe*, three, and *ponea*, besides *pon*, four). In the Muṇḍari, Laṛka, Bhumij, Ho and Kuṛi, probably also other related languages, this *-ea* is found in some or all of the numerals from two to ten. What *-ea* originally is, would take too much space to discuss here; but it is probably a mistake to say, that it is "the Dravidian possessive postfix" (*vide* J. A. S. B., Vol. LXV, Part III, No. 1, 1897, page 24).

[5] The Santal relationship in this way becomes very implicated to all outsiders. The custom is, although not so strictly, extended to all who in this manner become *bahoñharea* and *ajhuarea*; besides it is observed also in case of only artificial or village-relationship (*vide* note 12).

[6] There are three exceptions to this rule. When the husband is what they call a *ghaṛdi jāwāe*, i.e., a son-in-law who, instead of paying for his wife and taking her to his own home, lives with his parents-in-law and works, generally five years, to pay off the bride-price. (Jacob was a *ghaṛdi jāwāe* with Laban). *Ghaṛdi jāwāes* are generally found with Santals, who have only daughters or at least no grown-up sons. In this case the maternal grandparents' names will be given first, afterwards the paternal ones.

When twins are born, they are constantly named by the names of certain celebrated, according to Santal tales, twin heroes or heroines, as *Ram* and *Lokhon*, or *Cita* and *Kaprą*.

The third exception is, that if a Santal woman takes medicine in order to get children — a not uncommon practice — then the child which may subsequently be born, gets the name of the person, who has given the medicine, or of his wife.

[5] The name-giving festival, called *janam chaṭiar*, is celebrated, in case a male child is born, five days after birth, in the case of a girl, three days after birth. This is the rule; it may be postponed, but is always celebrated on uneven days after the birth. If the child should happen to be born within three days before new moon, the *chaṭiar* will be celebrated before this, even on the day of birth. The cause of this is their belief, that if the child becomes a child "of two months," as they call it, *i.e.*, gets its name in another month than that in which it was born, this will have disastrous results afterwards, *viz.*, when he or she afterwards marries, either the husband or the wife will soon die. When a child is born, the husband will, if alone, have to cook the food. In case he has to work with others for his subsistence, it also sometimes happens that he causes the *chaṭiar* to be celebrated on the day of birth. Till the *chaṭiar* is celebrated the house (and village) is unclean; when the house is purified in this way, other people may cook the food.

[6] It should, however, be mentioned that this is not the only, although the predominant cause of the second name among the Santals. A person being halt, blind, etc., will at once be called by a name signifying such a quality, whether there is any relation of his who is prohibited from naming his name or not. Sobriquets obtained in this manner are never considered a slander, and many Santals go under such names as "fool," "mad," "drunkard," etc. Very frequently the second name will be the same as his namesake had or a quality observed in this person.

[7] *Hiṛą* and *maṇik* are, however, used by the Santals at their marriage ceremonies, the first to signify a girl, the last word about a young man; from the Hindus they have got the idea, that *hiṛą* or *maṇik* is found as a crown on the cobra or even eaten by this serpent. They know that *hiṛą* is a stone with a great lustre.

[8] In an article in this *Journal* some two years ago it was stated, that amongst the totemistic non-Aryan races—to which the Santals belong—"sexual intercourse within the totem is permitted and even provided for, but marriage is not allowed." It may be—I can only speak of the Santals—that young people belonging to the same totem sometimes have illicit intercourse with each other; but it is very far

from being "permitted or even provided for." The morals of the Santal youths are certainly not always what could be wished for, and their parents sometimes wink at what is going on, as long as no fruits are seen. But should two persons belonging to the same totem be caught, they will have to suffer for it, *viz.*, be out-casted. The Santals have a real horror of people of the same totem having intercourse with each other and consider such people equal to brutes—at least they say so—and it would be strange if such notions should all of a sudden spring up just after marriage. Still I do not deny but that it sometimes happens. In such cases the girl will not, if not detected, tell with whom she has had intercourse; her parents will then "buy" a husband for her. The Santals have no separate dormitories for boys and girls, and have no tradition that they have ever had.

[9] They have no separate name for the custom, but about this kind of honouring they use the word *manao* (from Skr. through Hindi), which also is used about, "worship," "honour as a god."

[10] Properly called *Ṭhąkur*, which name, however, the now living heathen Santals seldom use. The old name has been exchanged for that of the sun which is also called *siñ boŋga*, i. e., the day *boŋga*, and with which *Ṭhąkur* is identified.

[11] The Santals have grave misgivings regarding their women whom they suspect of being able to cajole the *boŋgas* into all sorts of tricks to men, especially so the witches. For this reason the women are not allowed to be present at sacrifices, and, above all, they are not allowed to know even the names of certain *boŋgas* (*abge* and family *boŋgas*) from fear that evil should result from it. Nobody can know who is a witch and who not, the Santals reason; thus it is better to keep them all away. This is what they say now-a-days. Whether the fact of their women being kept away from sacrifices has another origin, it is not the place to discuss it here.

[12] The Santals do not like to call on each other by name, and if any one having a lower social position, or, what amounts to the same, standing lower in the family scale, should call on a person of a higher position by name, it would be considered a great insult (as amongst the Hindus). The elder one may call on a younger one by name; but they do not like to do it. In order to avoid unpleasantness the Santals are accustomed, when there is no real relationship, to make an artificial one, when they are living together in one village—they do this even with other *jats* living in their villages—and so they can use all their different terms. They do not feel happy so long as they have not done this.

We find the same reluctance of naming names towards their

national deities. The old *gurus* have, *e.g.*, told that the real name of their principal *boŋga Maraŋ buru* (lit. great mountain) is *Liṭa*, a name which has been preserved in their language for the rainbow, which is called *Liṭa ak'*, "the bow of *Liṭa*;" most people do not know it. The real names of some of their other deities they have absolutely forgotten.

It may be, that the mentioning of the name of anybody is also supposed to bring the party to the presence of the person speaking. This seems to be the case with *boŋgas*. I remember I once asked a Santal what the name of his *abge* was. He did not dare to tell it. I asked him then, what tribe or totem he belonged to, and having heard this, whether his *abge* was not named so and so. When he heard the name he positively trembled all over and finally ran away, saying that he did not dare to stay when I had called the *abge* to his presence; who could know what the *abge* would do?

In this connection another fact may be brought forward. They very often avoid naming things by their real name, specially so when they speak of evils or calamities; often it is shyness on their part to face a thing; but in some such cases there is no doubt, that they fear the naming of the event will conjure up something like it. Much might be said of this; but it would lead too far here. I shall only give two or three examples. When a person has been bitten by a snake, they will often tell of it by saying that "he has been hurt by a twig." They will not often plainly say that a person has died, but express it by "he has gone" or "he does not exist." Speaking of tigers or leopards they will frequently call them for instance *buru raj*, i.e., mountain-king. When they are hunting and see a leopard or a tiger they will always call the attention of their companions to the fact by calling out: "a cat," or some like name. As far as the Santals are concerned they look on the real name of a person as something belonging exclusively to him, so to say, a part of his being, and the naming of anybody's real name, either addressing or speaking of the person, may imply trespass upon his privacy, hence dishonouring, or calling to one's presence the person in question. It is a significant fact that even the heathen are not afraid of calling their *boŋgas*, e.g., voracious, scamps, etc. Frequently when speaking of their *boŋgas* they only call them *onko lebṛako*, i.e., the greedy ones. They think they may do this with impunity when they only avoid using their real names.

18 Co-parents-in-law will not mention each other's names when together, but are at liberty to do so when away from each other. Co-parents-in-law honour each other in a high degree; they are the only Santals who address each other and speak of themselves in the plural, when meaning only one person (*vide* note 30). A man and his sister's

children (*mamgea*) according to Santal ideas honour (the word *manao* is used) each other like *Cando*; but they name each other's names. See further on regarding parents- and children-in-law.

[14] Now-a-days all Santals do not observe the rule with regard to food, etc., touched by the woman in question.

[15] The bride-price varies according to the means of the parties. It is, when both the man and girl are unmarried, three, five or (seldom) seven rupees in cash and three or four clothes to the bride's nearest female relatives. If more than three rupees is given in cash, the family of the bridegroom gets something back, a cow (with or without calf), some brass utensils and clothes (for the bridegroom), in fact, worth more than they get for the bride. The price was regulated in the old times, when the rupee bought many times more than it now does amongst the Santals. What is paid for the bride, is generally less than is spent on marriage-feasts, etc.

[16] The *lumti budhi* is the duenna who follows the bride to the house of the bridegroom; she is generally a relation of the bride's father; other people may also officiate as such.

[17] The rule may be formulated thus:—The relatives of the husband cannot give the widow away in marriage and hence cannot take any bride-price or recover what they have paid for her. If she marries again, she must go to her friends or relatives, and the people in whose ward she is will get the bride-price. This rule is applicable to the widow of an elder brother also, in case any of the younger brothers do not keep her.

[18] A Santal youth generally marries at the age of 18–22, *i. e.*, as soon as they can afford it, after he has grown up. Child-marriage is very rare, and was introduced from the Hindus. Up till their insurrection in 1856 the Santals did not marry before about 25 years of age; that is very seldom the case now. Till a boy marries, he will live in the house of his elder brother, in case the father is dead; the elder brother will cultivate his land, etc. Living as a bachelor with separate house-keeping is absolutely unknown amongst the Santals.

[19] Probably a word derived from Skr. भाइ, from which most likely also the Santal name for brother (in general) *boeha* has come. The loss of the aspirate is no objection, as *bhahgũhar* is phonetically impossible in Santali. The aspirate has probably been transferred and lost before *h* in *hgũhar*; *boeha* corroborates this; instances of the same process in the same root are found in Prakrit (cfr. बहिणी and भइणी, Hoernle, "Compar. Grammar of the Gaudian Languages," § 132). *Hgũhar* and *hanhar* may also possibly be derived from Aryan roots.

[20] The meaning of *bgha* in Santali is "bride, young wife" or

"daughter-in-law;" it is not used regularly by young people of elder women for whom they have other terms. It is derived from Skr. **वधू** which has the same meanings. Many of the Santal names for relationship brought about by marriage are of Aryan descent. I mention this, because it shows that the Santals have in this respect been influenced by their Aryan brethren.

[21] Mr. Skrefsrud thinks, no doubt correctly, that the dual is used, because the husband (or wife) is mentally included when addressing one of the parties. When co-parents-in-law address each other in the plural (see note 13), the explanation seems to be that the children-in-law or the whole family on either side also are included.

[22] Their mutual position is also very expressively shown by the manner in which they salute each other, inasmuch as they keep their hands shadowing over their eyes. See the following paper on salutation.

[23] From *teña(ñ,-m,-t,-ŋ)*, (my, your, etc.), elder sister's husband which might probably be connected with Skr. **तनय** "propagating or extending a family, belonging to one's own family."

[24] *Lit.*, laughing-relationship. The following relatives stand in *landa saŋai* to each other: (1) *hiliyea*, i.e., a woman and the younger brothers and sisters of her husband; *hili(-ñ,-m,-t)*, (my, your, his) elder brother's wife is most probably connected with the Skr. root **चिल**, sport amorously, dally, wanton. There are other words in Santali from the same root and in meanings corresponding with the meanings of the Skr. root; (2) *teñaea* or *teña era*, i.e., a man and the younger brothers and sisters of his wife; (3) *kumaya*, i.e., a man and children of his wife's brothers; (4) *tataea*, *jiaya* and *goroŋea*, i.e., grandparents and grandchildren. *Tataea* are the grandfather and his grandchildren; *jiaya* the grandmother and her grandchildren, and *goroŋea* grandparents and grandchildren having the same name. Now-a-days there seems to be a tendency towards calling all grandparents and grandchildren *goroŋea*. All people having the same name are *goroŋea*, but only the *goroŋea* mentioned above stand in *landa saŋai* towards each other.

[25] Sometimes when saluting his *ajhnar*, the young man may be seen shadowing his eyes with his right hand. For further particulars see the paper on salutation.

[26] The most probable explanation of *ajhnar* seems to be, that the word in analogy with *bahoñhar* is a combination of *hanhar* (mother-in-law) and a word of the same root as *aji(-ñ,-m,-t)*, (my, your, his) elder sister. With regard to this last word compare Caldwell, "Comp. Dravidian Grammar," p. 478 (1st edit.).

[27] Also from Skr. (**दाचिका** *lit.* giver, namely of nourishment= wet-nurse, foster-mother) through Hindi.

[28] Long after I had written this down, I once heard a Santal say, that the younger sisters and brothers of their wives were *unkᵃ*, their name for what they when buying anything may get into the bargain from the seller. They thus have such an idea, whether it is the original meaning of the custom or not. As corroborating evidence may be cited, that they call younger brothers and sisters of their wives *ervel(-iñ,-me,-tęt')* *koṛa* or *kuṛi*, (*koṛa* is boy, *kuṛi* girl), a word which is clearly derived from *era* (woman, wife) with the Aryan stemforming suffix *el* (Skr. ल) denoting possession of a quality. If a man eventually marries his *ervelręt' kuṛi*, he has, however, to pay the full bride-price.

[29] The rule is not absolutely inviolable; but in case a younger sister is married before the elder one, according to Santal law one rupee is to be paid as compensation to the elder sister, "for defamation." The Santals reason, that when the younger one is taken in preference to the elder, the latter must have some fault, and to make up for such the rupee is paid. It is, however, a thing of very rare occurrence.

[30] As an appendix to these two groups some words ought to be said about co-parents-in-law, who, as mentioned in note 13, are forbidden to name each other's names when together. Here the custom clearly is meant for honouring; but when we examine the relations between the husband's father or mother on the one side and the wife's mother or father on the other, we find a touch of the same as has been supposed to lie at the base of this custom within groups A and B.

When of different sex the co-parents-in-law do not use the curious manner of salutation observed between them in case they are both men or both women, but they salute each other exactly as *bahoñharea* do (see the paper on salutation), and observe all the various customs mentioned as imposed upon *bahoñharea* with the only difference that both women, being equal, must behave as the younger woman mentioned there, when both *balaea* pairs are together. To give an example, if they are travelling together none of the women are permitted to mount the bullock cart. If they voluntarily break these rules, they will be punished both here and in the next world, they believe, just as the *bahoñharea*.

The custom of not naming each other's names is more strictly observed when they are of different sex; it is not absolutely forbidden, when they are away from each other; the cause of this is, if the theory brought forward is correct, apparently, that the danger of any mischief is small, partly on account of the higher age of the parties, partly because both men are considered equal in strength.

The above applies not only to real co-parents-in-law, but to all who by the Santals are considered to be such, *e.g.*, brothers and sisters of the *balaea*, etc.

[31] With the exception of some slight differences the Mahles behave exactly as the Santals with regard to the customs observed by the brothers- and sisters-in-law mentioned. As it may be of interest, I may as well state, what the differences are. They are chiefly to be found in their manner of saluting each other. The Mahles do not "receive" a salutation when having a higher position in the family scale. They remain sitting or standing, as it may be. If they are men, they, however, show that they have noticed the salutation by saying *jiọ* or *jiọ baba dhọn*, which means as much as "may you live and prosper." Santal men also sometimes make use of the same expression. The women, of inferior social position, salute as do the Santals; but the men do not stand still bent keeping their fist before their forehead. A Mahle man catches his right underarm with his left hand, and standing bent, he carries his right hand two or three times up to his head. The Mahles salute their *boŋgas* in the same way. The *bahọñharea*, when men, both salute each other in this way.

With regard to *ajhnarea* the only difference, the salute excepted, is that the Mahle *ajhnar* addresses the husband of her younger sister as *bọkọñ jāwāe* (lit. husband of my younger sister) and not as *bọbu*, as the Santals do.

Further the Mahles use the dual also when speaking *of* the relatives mentioned to others; this the Santals do not do.

In all other respects the Mahles living in this country behave as do the Santals, as far as regards this custom.

[32] With few exceptions, the different septs have their special common *abge*, some one, some two or more; but sometimes the subsepts are divided in this respect. People who may eat these kind of sacrifices together are considered related to each other. They say:—"Such and such persons are our relatives; we eat rice and meat together." This is a noteworthy fact. It is not impossible, that some traces of the history of the Santals might be found, when the names and other relations of these *boŋgas* were fully examined.

II.—*On a Rain-ceremony from the District of Murshidabad, Bengal.*—*By* Bābu Çarat Candra Mitra, M.A., B.L., *Corresponding Member of the Anthropological Society of Bombay. Communicated by the Anthropological Secretary.*

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At a place named Hāt Rudragunge in Pargana Fatteh Singh in the Kāndi Sub-division of the district of Murshidabad, there lived, on the eastern bank of the Mayurākshī River, a holy man, by name Kāmeswar Brahmachārī, who had with him images of two deities named Rudradeva (रुद्रदेव) and Kālā Rudradeva (कालारुद्रदेव).

Dewan Gangā Govind Singh, who played such an important part in the history of Bengal during the time of Warren Hastings, and who is reported to be the ancestor of the Jībadhars (जीवधर), Prabhākars (प्रभाकर) and other septs of the Uttar Rārhī (उत्तरराढ़ी) section of the Kāyastha community of Bengal, was descended from one Rudra Kaṇṭha Singh. Now Rudra Kaṇṭha used to suffer from a severe type of colic pain. While walking, one day, on the banks of the Mayurākshī, Rudra Kaṇṭha came to Hāt Rudragunge where Kāmeswar Brahmachārī used to dwell with his idols. Seeing the holy man and his idols, he was inspired with feelings of great veneration for them and, humbly offering his services to the former, used to be in constant attendance on the Brahmachārī. It is said that the anchorite was highly pleased with him for his faithful services and, taking pity on him, cured him of the colic pain. In course of time, the holy mendicant was taken ill and lay nigh unto death's door. Seeing that his end was imminent, the Brahmachārī confided the two idols Rudradeva and Kālā Rudradeva to the care of his faithful adherent Rudra Kaṇṭha Singh, and made him promise that he should every year bring the two idols to the spot where he (Kāmeswar) would be buried and, after bathing them with Ganges water and the five products of the cow, worship them there with due rites and ceremonies. After his death, the Brahmachārī was buried on the eastern bank of the Mayurākshī in accordance with the custom obtaining among Sanyāsis, Mahants and others who, renouncing the world, devote themselves to the service of God. Rudra Kaṇṭha, however, in fulfilment of his promise, kept the two idols with him. The Zemindar of Pargana Fatteh Singh, being all-powerful then in that part of the country, forcibly took away the two idols from Rudra Kaṇṭha and, having built a temple in a village named Rupapur near Jamooā, installed the said deities therein. In accordance with the dying injunction of Kāmeswar Brahmachārī, the two idols are every year

taken to his burial-place towards the latter part of the Bengali month of Chaitra, where on the 29th of the same month, the *homa* ceremony is performed in their honour, and pūjās offered to them. The idols are kept there for a day and a night only. The Kālikāpātās* (कालिकापाता), Deyāsins† (देयासीन) and other sects of worshippers of Rudradeva wait upon the idols on the ceremonial occasion and place their services at the disposal of their deityships.

On the day of the pūjā, the idols are worshipped according to Tāntrik rites. After two but before two-and-a-half *prahars* of night-fall, the pūjā is done and offerings of *khichri* (rice and pulse cooked together) are presented to the deities. In order to contribute to these offerings of cooked food for the deities, worshippers belonging to the Rājbansi‡ or fisherman caste dive underneath the waters of the river to catch *māgur* (*Clarias magur*), *lāṭhā* (*Nandus marmoratus*), and other kinds of fish. Before diving, a rope is tied round the waist of the fisherman, and the other end is held by his co-sectaries on the bank. Then the fisherman takes his plunge into the waters. After a short time, he is hauled up by his fellow-worshippers. The fishes that may have been caught by him are then roasted in the fire by the Brāhmans (acting as priests to the deities), and presented to the latter, along with offerings of *khichri* on a platter made of an entire plantain-leaf. Then one of the fisherman-worshippers put the leaf-platter in the earthen-pot in which the *khichri* was cooked, taking care, at the same time, not to spill on the ground any part of the remains of the food-offerings sticking thereto, and then again dives into the water and throws the pot with its contents towards the bottom of the river. When he rises to the surface he is found in a comatose state. Then his co-worshippers haul him up on the banks, lay him down before the god Rudradeva, and offer prayers to his deityship calling upon him to restore his devotee to his senses. Then the fisherman gradually recovers his consciousness, and when all right, rejoins his co-worshippers.

The image of the deity Kālā Rudradeva is now in the village of Uddhānpur near Cutwa in the district of Burdwan. There is a tradition to the effect that this idol was somehow lost, on the day preceding the pūjā, in the waters of the Mayurākshī. Sometime afterwards it was found near a bathing ghat in the river Ganges off Uddhānpur by a maiden girl. While bathing there, she felt something underneath the waters and, having picked it up, took it home. The villagers, having previously heard of the loss of the idol, at once recognised it to be the

* Name of a sect of the worshippers of Rudradeva.

† Name of another sect of worshippers of Rudradeva.

‡ In the district of Murshidabad, fishermen are called Rājbanshis.

lost one, and made arrangements for installing it in their village and for his daily worship. The Zemindar of Pargana Fatteh Singh, having heard of this, tried his best to bring back to his own village the lost idol, but did not succeed, as its finders did not like to part with it.

There is a curious rain-ceremony performed in connection with the deity Rudradeva. In times of drought and threatened failure of crops, the performance of this ceremony is had recourse to. All the outlets and drains in the temple of Rudradeva at Rupapur near Jamooā are closed, and 100 to 150 Brāhmans pour water on the idol till it is immersed up to its chin in water, when, it is confidently believed by the people of those parts, the rain-clouds gather and send down refreshing showers. My correspondent,* who has communicated to me the aforesaid traditions about Rudradeva and Kālā Rudradeva, and the following account of the rain-ceremony, says that this ceremony has been performed thrice within his recollection. In 1267 B.S., says he, when there being no rain whatever in the months of Āswīn and Kārtik, the paddy crops were about to dry up, the people of the neighbourhood raised some money by subscription from the members of the village-community, which sum was supplemented by some pecuniary assistance from the Zemindar of Pargana Fatteh Singh, and organized the celebration of the rain-bringing rites on an extensive scale. The services of several Brāhmans, well-versed in the Shāstras and enjoying reputation for piety, were enlisted by the celebrants. Some of these Brāhmans went to the river or a neighbouring tank and, taking their stand in the water, began to offer up prayers (**वरुणमन्त्रजप**) to the god Varuna, the Neptune of the Hindu Pantheon; some of them began to read aloud the Chandī (**चण्डीपाठ**); some began to offer up prayers to the goddess Durgā and Siva; while the rest commenced to present offerings of leaves of the holy Bilwa tree (*Ægle marmelos*) to Rudradeva. On the last day of this **स्वस्ययन** or ceremony for ensuring the peace and well-being of the community, all the doors and outlets of the temple of Rudradeva were, after the conclusion of the worship of that deity, closed up; and 100 to 150 of the Brāhmans, engaged for this purpose, began to bring vesselfuls of water and pour the same within the precincts of the *sanctum sanctorum*. After some time, the accumulated waters rose up to the level of the chin of Rudradeva's image. Shortly afterwards, rain-clouds gathered and copious showers of rain fell, which saved the paddy crops from destruction. After the downpour had ceased, offerings of food were presented to the deity, and the Brāhmans were sumptuously feasted.

* Bābu Shyām Sundar Ghosh, son of Bābu Gour Sundar Ghosh—Occupation Dewan in a Zemindar's family, resident of Jamuā Biswāspārā, Thana Kāndi, Subdivision Kāndi, District Murshidabad.

In 1280 B.S. also, the rains having failed in the month of Kārtik, the aforesaid ceremony was performed. It is said that on this occasion, too, the observance of the rites was followed by a heavy downpour. But while it was raining, one of the doors of Rudradeva's temple gave way, and the accumulated waters escaped. Soon after this, a high wind rose and blew away the clouds, thereby putting an end to the rain. Though on this occasion, there was not such a good downpour of rain as in 1267 B.S., yet the shower, however scanty, did much benefit to the standing paddy-crops. In the month of Kārtik last year (1303 B.S.), the same ceremony was performed to avert the drought impending at that time. But on this occasion the performance of the rites resulted in a fiasco, as though clouds gathered while the ceremony was being performed, yet it did not rain. My correspondent adds that—the more the Brāhmans poured the waters down, the more it leaked out through the crevices in the walls and doors of the temple and could not be retained therein by any manner of means. It is not known, says he, whether the failure is to be ascribed to the performing Brāhmans not being so pious and strict in the performance of religious duties as required, or to any other cause.

The whole of this rain-ceremony, if analysed, is found to consist of the two following component parts. The first part, namely, the ritual of the Brāhmans standing in the water and offering up prayers to Varuna and others, is nothing but an invocation to the rain-god. From the Rig-Veda, we learn that the Indian Aryans of those ancient times used to offer up similar prayers to their rain-god Parganya. This deity, who is one of the oldest of all the Aryan gods, did the work of Indra (Rig-Veda, viii. 6, 1), the Jupiter Pluvius of the Veda; sometimes of Vāyu, the wind; sometimes of Soma, the giver of rain. His duties in the last mentioned capacity are evidenced by his name Parganya, which originally meant "he who irrigates or gives rain."* He was invoked in the following strain:—

1. "Invoke the strong god with these songs! praise Parganya, worship him with veneration! for he, the roaring bull, scattering drops, gives seed-fruit to plants."

2. "He cuts the trees asunder, he kills evil spirits; the whole world trembles before his mighty weapon. Even the guiltless flees before the powerful, when Parganya thundering strikes down the evil-doers."

3. "Like a charioteer, striking his horses with a whip, he puts forth his messengers of rain. From afar arise the roarings of the lion, when Parganya makes the sky full of rain."

* *India. What can it teach us?* By F. Max Müller. London: 1892. Longmans, p. 188.

4. "The winds blow, the lightnings fly, plants spring up, the sky pours. Food is produced for the whole world, when Parganya blesses the earth with his seed."

5. "O Parganya, thou at whose work the earth bows down, thou at whose work hoofed animals are scattered, thou at whose work the plants assume all forms, grant thou to us thy great protection!"

6. "O Maruts, give us the rain of heaven, make the streams of the strong horse run down! And come thou hither with thy thunder, pouring out water, for thou (O Parganya) art the living god, thou art our father."

7. "Do thou roar, and thunder, and give fruitfulness! Fly around us with thy chariot full of water! Draw forth thy water-skin, when it has been opened and turned downward, and let the high and the low places become level!"

8. "Draw up the large bucket, and pour it out; let the streams pour forth freely! Soak heaven and earth with fatness! And let there be a good draught for the cows!"

9. "O Parganya, when roaring and thundering thou killest the evil-doers, then everything rejoices, whatever lives on earth."

10. "Thou hast sent rain, stop now! Thou hast made the deserts passable, thou hast made plants grow for food, and thou hast obtained praise from men."* (Rig-Veda, v. 83).

In remote Lithuania, the following among other similar prayers for rain used to be offered by the Lithuanians not many centuries back, to their god of thunder Perkunas, the Lithuanian prototype of the Vedic Parganya:—

"Check thyself, O Percuna, and do not send misfortune on my field! and I shall give thee this flitch."†

Among their neighbours—the Esthonians, traces of the rain-god cult survived as late as the 17th century, as will appear from the following prayer offered by them to their god *Picker* or *Picken*, the god of thunder and rain:—

"Dear Thunder (Woda Picker), we offer to thee an ox that has two horns and four cloven hoofs; we would pray thee for our ploughing and sowing, that our straw be copper-red, our grain golden-yellow. Push elsewhere all the thick black clouds, over great fens, high forests and wildernesses. But unto us, ploughers and sowers, give a fruitful season and sweet rain. Holy Thunder (Pöha Picken), guard our seed-field, that it bear good straw below, good ears above, and good grain within."‡

* Max Müller's *India. What can it teach us?* p. 192.

† *Idem.*

‡ *Op. cit.*, p. 192.

Similar prayers for rain and snow are offered by the Navajo Indians of America to their deities Hasjelti and Hostjoghan. These gods dwell upon the mountain-tops and call the clouds to gather round them. Hasjelti is the mediator between the Navajo and the sun. He prays to the sun, as follows:—"Father, give me the light of your mind, that my mind may be strong; give me some of your strength that my arm may be strong, and give me your rays that corn and other vegetation may grow." It is to this deity that the Navajo Indians address their most important prayer.*

It will thus be seen that the god Parganya of Vedic times is represented in modern Hindu culture by Indra, Varuna and Rudradeva, who are believed to be endowed with the power for sending or withholding rain and are, therefore, propitiated for their favours. In the rain-ceremony as performed in Murshidabad, it is Varuna and Rudradeva, who come in for the lion's share of the worship and offerings; but Indra is left out in the cold. But, in other places as noted in my previous papers embodying the results of my study of the rain-ceremony, it is Indra alone who is worshipped for rain. In Orissa also, Indra is found to be the chief deity of the rain-god cultus, as is evidenced by the following:—

"The wealthy merchants of the town (Puri in Orissa), the Zemindars and the Mahajans lately raised Rs. 700 among themselves and entertained the services of twenty-one Brāhmans who enjoy the reputation of special sanctity, and are versed in the Vedas to appeal to Indra, the God of Rain, to avert the impending famine and scarcity. It was a curious sight to see so many Brāhmans standing in water up to their necks, singing the Vedas and praying to Indra to give rain soon. During these days a shower or two fell in the mofussil, though no rain fell in the town."†

The second part of the rain-ceremony from Murshidabad is a survival in modern culture of the "sympathetic magic" so often practised by men in the lower culture. This part again includes the observances of the two following rites:—(1) The formation of a well-like reservoir of water within the precincts of the temple; and (2) the pouring of water on the deity, or rather the immersion of the idol in the well-like reservoir of water.

Some folklorists are of opinion that the well is the dwelling-place of the rain-god and that there is some sort of connection between well-

* *Vide* the *Navajo Ceremonial of Hasjelti Dailjis* in the Eighth Annual Report of the Bureau of Ethnology, U. S. A., for 1886-87, p. 277.

† *Vide* the Puri (Orissa) correspondent's letter in the Calcutta *Statesman and Friend of India*, of Friday, the 20th November, 1896.

worship and the cult of the rain-god. There is at Tobernacoragh, a sacred well on the island of Innismurray off the coast of Sligo in Ireland. It is said that, during tempestuous weather, the residents of that part of the country used to drain the waters of this well into the ocean, as they believed that, by so doing, and by the offering up of certain prayers, the tempest might be allayed and the weather calmed. Mr. G. L. Gomme observes: "In this case the connection between well-worship and the worship of a rain-god is certain, for it may be surmised that if the emptying of the well allayed a storm, *some complementary action was practised at one time or other in order to produce rain*, and in districts more subject to a want of rain than this Atlantic island, that ceremony would be accentuated at the expense of the storm-allaying ceremony at Innismurray."* There is also evidence extant from Scotland which confirms the hypothesis about the existence of a connection between well-worship and the rain-god cultus, and the identification of the well as the dwelling-place of the rain-god. There is in the island of Gigha, the well of Tarbat which is "famous for having the command of the wind. Six feet above where the water gushes out there is a heap of stones, which forms a cover to the sacred fount. When a person wished for a fair wind this part was opened with great solemnity, the stones carefully removed, and the well cleaned with a wooden dish or clam-shell. This being done, the water was several times thrown in the direction from which the wished-for wind was to blow and this action was accompanied by a certain form of words which the person repeated every time he threw the water. When the ceremony was over the well was again carefully shut up to prevent fatal consequences, it being firmly believed that were the place left open it would occasion a storm which would overwhelm the whole island."†

The shutting of the doors of Rudradeva's temple, the stoppage of every nook and cranny thereof, and the pouring of water so as to form a well-like reservoir therein, would seem to indicate that these rites are survivals in Hindu culture of the Irish and Scottish ceremonies connected with the propitiation of the rain-god in his dwelling. The reservoir of water would remind the god Rudradeva of a well which is his proper dwelling-place; and, by installing him in his habitation, it is believed that he would be so far pleased as to send down the required rain. This is quite in accordance with the ideas of men in the lower culture, who fashion anthropomorphic gods, and believe them to be endowed with the same feelings, passions and impulses as actuate

* Gomme's *Ethnology in Folklore*. London: Kegan Paul, 1892, pp. 94-5.

† Gomme's *Ethnology in Folklore*, p. 100, quoting from Sinclair's *Stat. Acc.*, viii. 52, and Martin's *Western Islands*, p. 230.

themselves. As no man is so happy as when he is in his own home, the gods are also supposed to be made happy and thereby propitiated when they are installed in their proper habitations. Just as in the Irish example, the draining of the water raised a storm, so in the example from Murshidabad, the escape of waters from the temple raised high winds.

The "sympathetic magic" of the savage races is based on the "Association of Ideas"—a faculty which, to quote Dr. Tylor's words, "lies at the very foundation of human reason, but in no small degree of human unreason also." Men in the lower culture, having often associated in thought those objects which he finds from his observation of physical phenomena to be connected in actuality, erroneously invert this process of reasoning, and conclude that this ideal connection must involve a similar connection in reality. As the result of this mistaken mode of thinking, the savages think that they can discover, foretell and cause events by means of processes which appear to men advanced higher in civilization to have nothing but an ideal significance. One of the commonest beliefs in connection with witchcraft is that an enemy may be slain by making a waxen image of him and causing it to melt gradually before a fire. This practice is nothing but the result of the erroneous reasoning adopted by men in the lower culture. An image is but a counterfeit presentment of the human being sought to be slain, and the connection between the two is only an ideal one. Now on account of the mental process above referred to, savages believe that if the image is melted and thereby destroyed, its physical prototype—the human being—will also be put out of existence. Of course in this case, there is a great deal of similarity in appearance between the image and the human being. But we may take a case wherein there is no similarity in physical appearance at all between the two things. One of the commonest beliefs, which still retains its hold on the minds of some of the modern European races of people and of other people in the higher culture, is that a person absent from the scene of operation or at a distance from it, may be physically affected by operating on something closely connected with him, such as his property, clothes, clippings of hair, parings of nails, &c. Here it is thought that, as there was previous physical connection between the human being and the thing once possessed by him, there must still be some sort of connection between the two notwithstanding that they are now separated. Under the influence of this belief, the witch, medicine-man, *obi* or *angakuk* of the savages are supposed to work evil to a human being by operating on his wearing apparel, nail-clippings and hair-shearings. When, among the Cherokee Indians of America, a shaman wishes to kill another,

either for his own purposes or for hire at the instigation of another, he conceals himself near the path by which his would-be victim is likely to pass. When the man sought to be slain appears, the shaman lies in ambush until he has passed by and then follows him secretly until he happens to spit upon the ground. On arriving at the spot, the shaman collects upon the end of a stick a little of the dust thus moistened with the would-be victim's saliva. The possession of the man's saliva is supposed to endow the shaman with power over the life of the intended victim. Many ailments are said by the Cherokee medicine-men to be due to the fact that some enemy has by this means "changed the spittle" of the sick man and caused it to breed animals or sprout corn in the patient's body. In the Cherokee love-charms also, the lover always figuratively "takes the spittle" of the girl in order to fix her affections upon himself. Similar superstitious beliefs are also to be found in European folk-medicine, in regard to the saliva.* For the same reason, savages object to give their names to strangers or to have their likenesses taken, for they fear that the person knowing his name or in possession of his likeness, will harm him by performing some rites or uttering incantations on his name or counterfeit presentment. For the same reason a Bengali woman, when *enceinte*, will not allow the torn hair of her head or any part of her wearing apparel to be taken by a stranger woman. Under the same impression, a Bengali mother will not allow any part of the bedding or wearing apparel of her infant child to be taken by a woman not belonging to the circle of her immediate relatives and acquaintances. All these objections proceed from a fear that the woman taking the torn hair or wearing-apparel or even a part thereof may turn out to be a witch and work harm to the woman about to become a mother or to the infant.

So deeply rooted in the savage mind is this belief that the mode of reasoning on which it is based, is applied even to cases where there is neither similarity in physical appearance nor any ideal connection based on previous physical connection between the two, but only a connection based on mere analogy or symbolism. If a Zulu wishes to buy oxen from another or to marry a woman, but the owner of the cattle demands a higher price than that offered by the would-be purchaser, or the woman refuses to marry him, the former would often chew a bit of wood in the belief that, as the wood would be softened by mastication, the heart of the cattle-owner or of his lady-love would, in like manner, be softened thereby so that the latter may ultimately sell the oxen to him or accept his offer of marriage. When the Khonds,

* *Vide* the *Seventh Annual Report of the Bureau of Ethnology*, U.S.A. Washington : 1891, p. 392.

as a preliminary measure to the performance of their *Meriah* sacrifices, torture their human victim before actually sacrificing him to the earth-goddess, and find him shedding many tears, they take the fact of the weeping as a favourable omen betokening the fall of copious rain. Now many of the rain-making ceremonies practised by men in the lower culture are but examples of sympathetic magic based on analogy or symbolism. The idea lying at the very root of all this rain-making magic is that if a stone or idol representing the rain-god be drenched with, or dipped in water, he will drench the earth with rain-water. Among the savages, the magic ceremony is usually performed on a stone representing the rain-god, as will appear from the custom obtaining among the Ta-tu-thi tribe of New South Wales where the rain-doctor breaks off a piece of quartz crystal and spits it towards the sky. Then the remainder of the crystal is wrapped up in emu feathers soaked in water and hidden.* Among the natives of Samoa also, in times of drought, the Samoan priest and his followers dressed themselves up in fine mats and went in procession to the stream, dipped the stone, and prayed for rain.† Sometimes the magic is practised on a human being for purposes of rain-making, as among the Servians who, in seasons of drought, adorn a girl with flowers and leaves and pour water on her in the belief that the rain-god will also, in a similar manner, pour water on the dried-up earth.‡ Sometimes the image of the rain-deity is chosen upon which to practise the magical ceremony, as in the case of Rudradeva whose image in the temple is drenched with water by the Brāhmans.

So the conclusions that I would draw from this study of the rain-making ceremony from Murshidabad may be briefly stated as follows:—

1. The fact of shutting up all outlets of Rudradeva's temple and filling the *sanctum sanctorum* with water may have a remote connection with the belief that the well is the dwelling-place of the rain-god, and that worshipping the rain-god in a well-like reservoir of water may propitiate him and, thereby, cause rain.

2. The dipping of the idol representing Rudradeva, or rather the drenching of it with water, is an example of rain-making by sympathetic magic, having its analogues among many races in the lower culture.

* Frazer's *Golden Bough*, ii. 14.

† Turner's *Samoa*, p. 45.

‡ Tylor's *Primitive Culture* (Ed. 1891), Vol. I, p. 117.

III.—*On the different kinds of Salutation used by the Santals.*—*By* P. O. Bodding, *Mohulpahari, Santal Parganas.*

[Received 10th January; Read 2nd March, 1898.]

It may be thought strange, but it is none the less a fact, that however uncivilized the Santals may be, they have in many respects a very elaborate ceremonial which they are bound to observe, if they do not wish to be considered unbred; their ceremonial in connection with marriage for instance is quite astonishing.

Although all their ceremonies and customs must have a cause and a meaning, many of them have in the course of time decayed so as to have lost at least something of their original form, and some have been substituted by other customs.

Owing partly to their peculiar social—*i. e.* patriarchal or family—organization, they are always in the habit of outwardly showing their respect for each other; this is more specially seen when they salute each other.

The Santal general name for salutation is *johar*,[1] a word which has been borrowed from Hindi जुहार (Dr. Hoernle, "Comp. Gram. of the Gaudian Languages," p. 475) and originally literally means, "cause to be regarded." Their manner of saluting each other, however, varies according to their mutual family position: equals alone salute each other in a manner equal on both sides; if one of the saluting parties has a higher family position than the other one, this is most clearly shown in their salutation, the inferior person having to make his obeisance, the higher one *receiving* the salute. Their language also expresses this; the inferior person makes the higher one his *johar* (*joharaeae*); this is never said about the higher one, but *johare ataya*, that is, he receives the *johar*.

A person having what we would deem a higher social position than an other does not make any difference in this respect; a village headman or even an overchief will have to bow to his rayot, if this latter is, *e.g.*, counted the elder of the two.

It will be understood that, unless the saluting parties are of equal family position, the salutation is always commenced by the inferior party. Their customs of salutation are beautiful, although some of them are rather curious.

They have four different kinds of *johar* or salutation, *viz.*, (1) *ḍoḅoḳ' johar*, (2) *bahoñharea johar*, (3) *balaea johar*, and (4) *so johar*.

(1) *ḍoḅoḳ' johar* (*lit.* bow-salutation) is used by all people of whom one has a higher family position than the other, and who have not to use any of the three last mentioned salutations (regarding which see

1 For footnotes see pages 42 and 43.

below), and by all strangers when there is no doubt about the mutual age of the parties.

This salutation, however, varies with the sexes, a man making his *ḍǫbǫk'* in one manner, a woman hers in another; a man and a woman also receive the *ḍǫbǫk' johar* in different ways; there is however, no difference in a person's manner of saluting either a male or a female.

To describe their proceedings we shall take some typical instances.

When saluting his father a man will do as follows:—The young man approaches his father, and bowing himself so that the upper part of his body comes almost at right angles with his legs, he catches his right under-arm loosely at the elbow on the underside with his left hand, lifts his right fist (more or less closed) to his forehead and stands for a few seconds in this position, while the father acknowledges his salutation. In former times the young man had, when saluting his father (or superiors), also to kneel with one, the right, leg. Then his head was brought down nearly to the earth. This is now almost abandoned; I have never seen it spontaneously done.

To acknowledge or receive the salutation the father catches his right under-arm loosely with his left hand somewhere between the elbow and the wrist—as a rule close to the elbow,—then keeping his fist closed stretches his right under-arm downwards over the head of his saluting son, opens his (right) hand, so that the palm is turned to the left, and finally brings it up to his forehead. The practice of opening the hand is not always followed, some people keeping it loosely closed the whole time; this is probably done from carelessness. Sometimes the father, when receiving the salutation will say *jiạ* or *jiạ baba dhǫn*, which means as much as: "may you live or prosper," or something to the same purpose.

A daughter salutes her father by crouching on her knees, bowing her head almost to the earth; when saluting she does not exactly kneel, as she does not touch the earth with her knees, the necessity of this being prevented by her putting her hands on the earth. The fullest submission to authority is expressed by what she does. This bowing is by the Santals called *ombak'*.

A son and a daughter salutes their mother exactly as they do their father; but the mother receives their salute somewhat differently. When her son or daughter has bowed before her, she extends both her hands down over his (or her) head, and keeping them close together turns the palms of her hands up with the fingers a little bent; then she moves them in a particular manner over the head of the saluting person—the hands are lifted and the fingers bent inwards a little more some two three times—and lastly she lifts them up to her forehead. She keeps her hands together the whole time. Sometimes she may be heard

making a sound with her mouth as if she was kissing the saluting person. This is, however, by no means done by all.

This kind of salutation is performed in exactly the same manner by all relations and persons who, as already remarked, have not to use the other kinds of *johar* mentioned, *e.g.*, by elder and younger brothers and sisters, uncles and aunts on the one side and nephews and nieces on the other, etc. It should be observed that when saluting a superior person in this manner they will, to show their respect, very frequently, take off their shoes, lay down on the earth a stick, etc., if they happen to have such things on or with themselves.

Just as amongst Europeans the bow may be friendly, distant, ceremonious, etc., the Santal *ḍoboḳ' johar* may be performed so as to convey all these shades of feeling. The younger person may bow more or less, do it carelessly, haughtily, etc., and the receiving one may easily show that he or she does not heed it very much, *e.g.*, by remaining seated, by lifting his hand only half way up to his forehead or even less, or otherwise.

While the younger person shows his regard and submission to authority, the manipulations of the elder or higher persons are most probably meant to signify that they receive the salutation, and not as a token that they give a blessing. The first part of their manipulations may mean this, but the latter parts certainly look like their receiving something.

There is one pair of relations, *viz.*, *ajhnarea*, a woman and her younger sister's husband, who use this kind of salutation, but occasionally make a small difference, inasmuch as the man does not always keep his fist closed before his forehead, but his hand shadowing over his eyes. This is most likely the original manner, as it in this respect corresponds with the manner in which *bahoñharea* salute each other, but it is not always observed now. The woman (*i.e.*, *ajhnar*) receives the salute just as a mother or an elder sister does, always, however, omitting any sound with her mouth.

(2) *Bahoñharea johar* is the kind of salutation used between *bahoñharea*, *i.e.*, certain brothers- and sisters-in-law, *viz.*, a man and his younger brother's wife, and a man and his wife's younger brother's wife.

They proceed as follows:—Standing some eight feet apart both bow, so that the upper part of their bodies stands at almost right angles with their legs. The man catches his right elbow with his left hand—just as when making *ḍoboḳ' johar*—carries his right hand up to his forehead and keeps it there *shadowing* over his eyes. The woman keeps both her hands with the finger tips touching each other shadowing over her eyes.

Both of them show by this shadowing more than mutual regard; they are namely to look on each other as sacrosanct to each other.

All brothers- and sisters-in-law commence to salute each other according to the rules for their special mutual relationship when the bride has for the first time after marriage—the marriage rites are performed in the bride's home—been brought to the house of the bridegroom. All the brothers and sisters, etc., of the bridegroom assemble, and the bride washes their feet. It is rather curious to see this ceremony performed. The persons to be washed come one after the other, sometimes, when being of a jocular turn of mind, having besmeared their feet and legs with mud, and put their feet on a small piece of wood before the bride who has some water in a brass cup. When this is done she catches one of their feet with both her hands—it is called *kaṭkǫm* (from their name for a crab) and practised towards brothers- and sisters-in-law,—and does not leave hold of them before they give her something (the women generally give some kind of ornament, the men a few pice). After this the bride and the party washed, if a *bahǫñhar* or *ajhnar*, take water in a cup (one each) and pour it over each other. Then they salute each other. From this time the *bahǫñharea* and *ajhnarea* have to observe all the customs mentioned in my former paper on Taboo.

It should be remarked also that co-parents-in-law when they are of different sex use the same kind of salutation as *bahǫñharea*.

(3) *Balaea johar* is the salutation used by co-parents-in-law when they are of the same sex, *i.e.*, the fathers of the bride and bridegroom and the mothers of the same.

It is somewhat differently performed by the men and the women and is commenced to be used from the time of *hǫrǫk' cikhṇa* (*i.e.*, betrothal), before the marriage is actually solemnized.

The men proceed in the following manner:—Going near to each other they both catch each other's hands (the one with his right the other one's left) and do not leave hold of each other's hands before the whole salutation is gone through. Then bringing their hands near to each other they draw them three times backwards and forwards between their breasts, and lift them up between themselves over their heads; having brought their hands down again they butt each other's shoulders (right shoulder against right and left against left) three times, again draw their hands three times backwards and forwards as before, and finally again lifting them up over their heads say "*Saheb!*"

This very elaborate salutation is used when they for the first time salute each other as co-parents-in-law; afterwards when meeting they generally use a much shorter form, *viz.*, catching only each other's right hand, like hand-shaking Europeans, they draw these three times back-

wards and forwards between their breasts, and finally lifting their right hands up over their heads they say "*Saheb!*" Sometimes, when very good friends, people may be seen jokingly to multiply this drawing backwards and forwards of their hands many times.

The co-parents-in-law, when both women, salute each other as follows:—Approaching each other both bow (without bending their knees), and stretch their hands kept close beside each other downwards so as almost to touch the earth, and move their hands three times in the same manner, as a mother does when receiving the salutation of her son. Then rising a little they catch each other's arms, just above the elbow or where they may happen to get hold of each other and butt each other's shoulders three times. Finally they finish the salutation by repeating what they did first. The women do not say "*Saheb*" or anything else.

The meaning of these elaborate salutations, besides that they are to show each other an absolutely equal regard, is not clear. Although the shoulder-butting, as it is now performed, looks rather droll, it may originally have been meant to signify that the co-parents-in-law are to assist one another, stand shoulder to shoulder or something of the like.

Co-parents-in-law, when men, call on each other by using the word *Saheb* or *sumdhi*, a word which they have got through Hindi or Bengali from Sanskrit, and which has the same meaning as *bala*.[2] Speaking to his female co-parent-in-law the man will address her as *sumdhi*; the women use *Saheb* to the man and *gorom* (not *bala* or *sumdhi*) to each other. The meaning of *gorom* is name-sake.

According to Santal custom brothers and sisters are in some cases counted to stand in the same relation as the persons themselves. If, *e.g.*, A and B are *balaea*, the brothers and sisters of A also are the *balat* of B, and his sisters and brothers. Now it may sometimes happen, that one of these brothers or sisters is only a boy or a girl. One might in such cases expect that the boy or girl ought to bow to the elder one; but it is not so; if they salute each other at all, they have to use *balaea johar*.

It should be added that co-parents-in-law, when talking together, address each other and speak of themselves in the plural, although meaning only one person. The explanation of this is that the parents (and children) on any or both sides are included. In the same manner all who are counted parents and children-in-law, *bahoñharea* and *ajhnarea* included, when talking together, speak of themselves and address each other in the dual, mentally including the wife (or the husband) of themselves or the person addressed, as the case may be.

(4) The last kind of salutation mentioned was *so johar*, which is used by people, strangers or relatives who on account of equal age or from other causes do not know which has the higher and which the lower position.

It would be a great breach of etiquette—to say the least—if anybody of a higher position should even by mistake happen to bow to an inferior one, and so they manage to keep up the honour of all concerned by saluting in an equal manner. None of them bow, but both salute each other as the person of the higher position does when using *ḍǫbǫk' johar*, *i.e.*, both receive each other's salutation. This *so johar* is used by and between both sexes.

The word *so* is probably to connect with Skr. सम equal, like, or some therewith related root. It will be seen, that *bahǫñharea johar* and *balaea johar* really are a kind of *so johar*.

Besides the different kinds of salutation mentioned the old *gurus* have told that formerly the Santal parents were in the habit of kissing their sons, and children-in-law, in fact the whole family living with them, at least once every day. This is abandoned now, at least in these parts of the country. Old people frequently complain that this era is a bad one; honour, regard and love are gone.

When such things as prostrating oneself before a person—a practice which, however frequent amongst other races, is very seldom seen amongst the Santals, and which cannot properly be called salutation—are omitted, I cannot remember any other manner of saluting used by the Santals amongst themselves. There is, however, a tendency amongst them to adopt the Hindu *salam*, mostly when saluting people of other races. Then they also are in the habit of saying *salam*.

The now living Santals are not so polite as those living two-three generations ago. Then, according to what the old *gurus* have told, the custom was, that all people belonging to the same household saluted each other every morning when they came out of the house; all people belonging to the same village saluted each other when they first met in the morning; when going to see some *tamasha*, the village youth saluted the village chief and his wife before starting; and going to or coming back from a visit to relations or elsewhere, they were in the habit of saluting the people of the household staying at home.

The last mentioned custom is still in vogue; but the others are generally not used. The village youth now-a-days is accustomed, before going to see a *tamasha* (*i. e.*, mostly Hindu festivals), to assemble in the village street and dance outside the house of the headman; when starting they make their *ḍǫbǫk'* to *Mąñjhi haṛam*, *i. e.*, the spirit of the departed head-

man who is supposed to reside, as a *boŋga*, in a place erected for him in the street just outside the headman's house.[3]

Else the now living Santals salute each other when coming on a visit and when leaving those they have visited, at family festivals where it is imposed on them by custom, when meeting away from home, etc. Unless being near relatives or well acquainted, they do not generally much trouble themselves about saluting each other when they occasionally meet. Unless at ceremonials and when near relatives, Santal men and women never salute each other, scarcely look at each other; a man and a woman seen talking together is considered almost amounting to evidence that they have illicit intercourse with each other. The Santals—as will be understood from the description given—do not salute an assembly of people *en bloc*, but must make their *johar* separately to everybody, or as many as they think fit or necessary, of those present. To avoid misunderstanding it should be added, that the Santals are generally of a very sociable nature and also very hospitable. They like to talk, it being their only means of getting news. It has often astonished me, how rapidly news is in this way spread.

People coming to their homes are treated very civilly; they at once give them bedsteads or stools, etc., to sit on, bring them water to drink and ask them as to their welfare. People not doing this are considered illbred. When they ask them how they are, they have a stereotype form of answer, *viz.* "By the grace of God (not of any *boŋga*) we are well for the present (*lit.* these one or two days); we don't know, how you are, but by the grace of God probably you are also well." To which the person asked answers in the same way. It should be remarked, however, that this form is used almost exclusively by elder persons or persons of social standing, and not by young men or women. More than all others *balaea* use these kinds of complimentary terms.

Specially the relatives of the wife are treated hospitably, but also others, neighbours and even strangers. If anybody for some reason or other happens to come to their house, they will invite them to eat with them, if they can afford it and the food is ready.

It only remains to say a few words about the manner in which they salute their *boŋgas* or spirits. They have no images (the only exception being sometimes in the *Mañjhi than* as remarked in note 3), but offer their sacrifices before stones or magic circles, on or in which they have smeared *sindur* or vermillion. The *boŋgas* are saluted on such occasions only.

When they have made the sacrifice and gone through the incantation, they generally do it as follows:—Sitting kneeling with one leg the sacrificer puts both his hands with the palms turned towards each other and the finger-tips touching each other before his face, at the same time bowing more or less profoundly before the sacrificial blood. If more than one *boŋga* is worshipped at the same time—the magic circles or stones then stand in a line,—he remains kneeling at the same place, only turns a little and bows to every *boŋga*, the one after the other. After this he finishes his salutation—probably to show that he believes his sacrifice has been accepted —by performing the same manipulation as is done when men receive the *ḍgbgk' johar*, in case more than one *boŋga*, as many times as there are *boŋgas* worshipped.

This salutation (or rather the first part of it) is called *jgrhat* (*lit.* joined hands). Besides at sacrifices it is used when they make a promise to a *boŋga*. Turned towards the East standing on one (generally the left) leg they catch the heel of this foot with the toes of the other foot. Then they make *jgrhat* keeping a brass pot (*loṭa*) between their hands, and allowing the water gradually to run out they invoke some *boŋga* or other and promise to give a sacrifice in case they are heard. When the water has been poured out, they sink down to the position of a sacrificer, put the pot upside down on the earth and perform the salutations of a sacrificer mentioned.

Jgrhat is also used when taking an oath. The Santals have many different kinds of oaths; in most of them *Cando* (*i. e.*, the sun or the Supreme Being) is invoked; in such cases the person swearing salutes *Cando* by making *jgrhat* turned towards the East.

Besides, *jgrhat* may be seen used by people who make a supplication, cry for mercy, will show special regard, etc. It is by custom imposed on a man who, having previously been outcasted, has made arrangements to be taken into the tribe again. When the overchiefs, village headmen and people of the country come to do this, he has to receive them standing at the entrance to his village with a cloth round his neck (like a rope to be led away with, a very old custom frequently seen depicted on Assyrian monuments; see also 1 Kings, xx, 31, 32) and making *jgrhat*, having, however, a brass pot with water in his hands. It is added, that he is to look very meek and downhearted.

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[1] With regard to the pronunciation and the meaning of most of the Santal words occurring in this paper, the reader is referred to the previous paper on Taboo.

[2] The Santal word for co-parent-in-law is *bala*; a *bala* is never said, but the word must have the pronominal suffix joined to it (*bala-ñ-m-t*, *i. e.*, my, your, his *bala*). I shall not try to decide whether the word is of non-Aryan or Aryan derivation. It might be tempting to connect it with Skr. बल, power, strength, whereby the meaning of *e. g. balañ hoṛ* (*hoṛ* means man) might be said to be the man who is my (or my family's) strength or something to that purpose. Something might be said for it. The Santal marriage, when it is not a love match, as sometimes happens, is really a connection between two families (hence their name for marriage *bapla*, which is a collective or reciprocal formation, of *bala*: a collection of *bala*, or reciprocal *bala*-ing—in analogy with *hapṛam*, from *haṛam*, an old man (mostly used in the plural, *hapṛamko*, about the forefathers), or, *dapram*, to meet mutually, from *daram*, to meet,—and which probably is the same formation which is found, *e. g.*, in the collective *rapaj* (from *raj*), a collection of kings, and in the reciprocal verbal form, *e. g.*, *dapal* (from *dal*, to strike) to strike each other or mutually; if *bala* is derived from Skr., the original meaning of *bapla* would be mutual, reciprocal strengthening; in support of this supposed meaning of *bapla* might perhaps also be cited the above-mentioned peculiarity, that *balaea* address each other and speak of themselves in the plural, mostly using the inclusive form (*abon* or *abo*), more seldom the exclusive *ale*). The young people were formerly not even asked about their will, all was arranged between the heads of the families by the help of a go-between or marriage broker. This is now being gradually altered, inasmuch as the young people are now-a-days allowed to get a distant look at each other (not more) on a market place, etc.

[3] This place is called *Mąñjhi than*, and is built as a four-cornered raised platform with a four-sided thatched roof supported by five wooden posts, one at each corner and one in the centre. At the base of the central post sometimes one or two stones or wooden heads are placed before which sacrifices are made. One of these represents *Mąñjhi haṛam*; about the other there is some doubt, some saying it is his wife. Two heads are by no means always found. Expressions found in some of their *boŋga*-invocations seem to indicate that *Mąñjhi haṛam* is identical with *Pilcu haṛam*, *i.e.*, the first created man.

IV.—On the Lizard in Indian Superstition and Folk-Medicine.—By Bābu Çarat Candra Mitra, M.A., B.L., *Corresponding Member of the Anthropological Society of Bombay. Communicated by the Anthropological Secretary.*

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It is no wonder that, among people in the lower culture, the ills that human flesh is heir to should have given rise to a good deal of superstitious beliefs and occult practices, considering that the science of medicine has not made among them any progress similar to that which it has made among people in the higher culture. Among primitive people in all parts of the world, the origin of bodily ailments and of physical suffering is often ascribed to the agency of malevolent spirits which are always wandering about to tease and torment men who may chance to offend them. It is for this reason that one of the practices adopted by primitive men for the alleviation of disease and physical suffering is the propitiation, by prayer and offering of presents, of malevolent spirits. Or, sometimes, animal substances, plants and minerals are used by them as remedies for the ailments from which they may suffer. In the majority of these cases, the medicinal properties of these substances are ascribed to some occult power supposed by men in the lower culture to be inherent therein. A careful study, therefore, of the folk-medicine of men in the lower culture may throw some light on their mental condition.

It would appear from the instances mentioned below that the lizard, or rather a kind of oil extracted from it, is superstitiously believed in Northern India and adjacent countries, to be a popular remedy for loss of virility. On the evening of Monday, the 4th December, 1893, I came across a man with a "*laṭhi*"* on his shoulder, in the compound of the District Judge's Court at Chupra. He had tied at one end of his *laṭhi* a large number of living specimens of the common Sand-Lizard of North India (*Uromastix hardwickii*). On asking him for what purpose these reptiles were required, I was given to understand that they were used as an aphrodisiac or medicine for loss of virility. This piece of information was subsequently confirmed to me by a Muhammadan peon of the Judge's Court. The dealer said that he had brought those creatures from Lucknow and the Upper Provinces, and that, after capturing them, their lumbar vertebræ were broken by giving them a twist round the waist. These creatures are supposed to live, while tied in this way, by feeding upon the air. In a similar manner, the chameleon was supposed

* Thick stick.

in Europe during the Middle Ages to feed upon the air, which was sometimes called the "chameleon's dish." Shakespeare alludes to this curious belief in his *Hamlet*, when he puts the following words into the mouth of Hamlet (Act III, Scene II) :—

King. How fares our cousin Hamlet?

Ham. Excellent, i' faith; *of the chameleon's dish: I eat the air*, promise-crammed: you cannot feed capons so.

The same belief in the medicinal properties of lizards also exists among the natives of Afghanistan and Baluchistan. The members of the Afghan-Baluch Boundary Commission, who explored early in 1896 the debateable land between the two aforesaid countries for the purpose of demarcating the boundary-line between them, found this belief obtaining among the natives of the tract of country traversed by them. They found that the lizard scientifically known as *Uromastix asmussi*, Strauch., is considered by the people of those parts as a capital remedy for loss of virility. "The natives also extract from them (lizards) an oil which is used for rheumatism and as an aphrodisiac. It is said that the lizards sleep at the mouths of their burrows, and that shikaris catch them by creeping up and breaking in the roof of the burrow with a large stone so as to block the burrow from behind." *

The same belief is said to be entertained by the natives of the tract of country traversed by the members of the Afghan-Baluch Boundary Commission, in respect of another lizard of which the scientific name is *Ophiomorus tridactylus*, Blyth. It is said that these lizards "Are in great request among the natives, who fry them alive in a closed vessel and thus obtain from them a burnt oil of nauseous appearance which is believed to be of great value in impotence." †

In Bombay, it is said that some Marāthas use the blood of the great lizard in cases of snake-bite. ‡

In Behar, and in the district of Gorakhpur in the North-Western Provinces, much virtue is ascribed to the tail of the common house-lizard as a curative agent. If its tail is cut off on a Sunday or Tuesday and, after wrapping it up in a piece of linen, worn as an amulet by a person suffering from ague, it is believed that the lizard's tail will cure him of the ague. Or if the tail is tied up with a string measuring the length of the patient from head to foot, and worn as an amulet by him, it is supposed to have the same effect of driving away the ague.

* *Vide* the *Journal of the Asiatic Society of Bengal* for 1896, Vol. LXV, Part II, page 558.

† *Op. cit.*, Vol. LXV, Part II, p. 561.

‡ J. S. Campbell's *Notes on the Spirit-Basis of Belief and Custom.* Bombay: 1885, p. 49.

In the same way, it is believed in Bengal that if the lizard's tail is cut off on a Saturday (and not Sunday as in Behar) or Tuesday and mixed up with certain medicinal herbs, and then worn as an amulet on the left arm or the neck by a person suffering from periodic fever and ague, it will cure him of that disease. The following is the detailed Behari recipe, in Hindi, for the preparation of the amulets from the lizard's tail :—

अतवार औ मंगल का रोज़ बिकुतीया का पोंछ काटकरके तीन किसीम का जड़ी* होता है। पैाअल टुकड़ा जाड़ा का। औ दूसरा अँतरिया† का। औ तिसरा टुकड़ा तिजरा‡ के वास्ते मोफ़ीद होता है। हरएक टुकड़ा को अलहदे अलहदे पाक कपड़ा में लपेटना चाहिये। साढ़ाहाथ कचा तागा में अलहदे अलहदे बाँधना चाहिये। औ जिस शख़्स को जो बिमारी सदर मोतजो करे उस यंत्र को पुरुष के दहिना हाथ में औ औरत के बायें हाथ में बाँधना चाहिये। औ छूट जाने पर एक ब्रम्हन को सौधा दछीना दे देना चाहिये॥

TRANSLATION.

Three sorts of amulets are made with a lizard's tail, provided it be cut off on a Sunday or Tuesday. The first piece is used as an amulet for driving off simple fever. The second piece is used as a charm for curing tertian ague or fever coming on at intervals of one day. The third piece is used as an amulet for driving off fever recurring at intervals of three days. The aforesaid three bits should be separately tied up in separate pieces of new cloth, and separately tied up with separate pieces of unbleached and unstarched thread measuring 1¼ cubits long. If a person be afflicted with any of the aforesaid diseases, the patient should wear the amulet for that disease, mentioned above, on the right arm if he be a male. If the patient be a female, she should wear the amulet on her left arm. When the patient is cured of the disease, he or she should give a Brâhman some presents in food and money.

The lizard also plays an important part in the popular superstition of many Asiatic races of people. It would appear from my article "*On some Superstitions prevalent in Bengal*" published in the *Journal of*

* जड़ी literally means "medicinal herbs." Here it means "an amulet."

† अँतरिया means "tertian ague" or "fever coming on at intervals of one day."

‡ तिजरा means "fever recurring at intervals of three days."

the Anthropological Society of Bombay, Vol. II, pp. 582–96, as also from another article entitled "Popular Superstitions in Bengal" published in the first volume of the same Society's *Journal*, p. 354, that lizards figure largely in Bengali superstition. Many omens are drawn in Bengal from this harmless little reptile, as will appear from the following examples: If a house-lizard (*Ptyodactylus gecko*) utters its peculiar cry of "tuck-tu" when a man is speaking of something, he at once cries out "*satya, satya*" or "it is true, it is true;" and it is believed that the thing spoken of will surely happen. If a lizard chirps from above a person, it is said to betoken good to him; if from the east, it forebodes success; from the south-east and south, its chirping portends fear; from the south-west, quarrel; from the west, profit; from the north-west, cloth, fragrance or water; if it chirps from the north, it prognosticates the winning of a beautiful girl; and, if from the north-east, it augurs death. If a lizard chirps thrice, the ground is struck with the fore-finger assisted with the thumb; just as in the Bombay Presidency, its chirping elicits from the bystanders the ejaculation of *Krishna! Krishna!* If a lizard falls on the body of a person, or passes urine or ordure on him, it is believed he will be taken ill. Sprinkling the body with Ganges water is said to avert the evil arising from the touch of the lizard or of its ordure. If a lizard falls on the right side of a person, it prognosticates to him the loss of a friend and wealth; if on the left side, profit; if it falls on his head, neck, breast, or back, it betokens to him the gain of a kingdom; and, if on his hand, leg or heart, happiness.

Similarly in the Bombay Presidency, various omens are also derived from the falling of house-lizards on the bodies of men and women, and also in general, as will appear from the elaborate paper on this subject published by Mr. K. Raghunathjee of Bombay in the *Indian Antiquary*. Briefly speaking, the fall of the lizard on any part of the human body is interpreted as an omen prognosticating wealth or poverty, long life or death—in short, gain or loss, happiness or misery, according to the part of the body on which it falls. In order to avert the evil arising from the fall of a lizard on the body of a person, various ceremonies are prescribed, among which may be mentioned the following:—

"When touched by a lizard, the person touched should immediately bathe in the clothes he wore at the time; he should drink a mixture of the five products of the cow, *viz.*, dung, urine, milk, curds, and clarified butter, and, putting melted butter into a cup, he should look into it. Whether weak or strong, if a man has any regard for his welfare, this should be his first care. He should next perform the *Puṇyâha-vâchana* ceremony, which is as follows:—A golden image of a lizard is made, ten

pâl in weight, or as near it as the sufferer can afford. It is dressed in a piece of red cloth and worshipped with sandal paste, flowers and grains of rice. In front of it are then placed an earthen jar on grains of rice decorated with cloth, flowers, and grains of rice, and filled with the five kinds of ambrosia (*pañchâmṛita*), *viz.*, milk, curds, clarified butter, honey and sugar; the five products of the cow (*pañchagavya*); the five jewels (*pañcharatna*), *viz.*, gold, diamond, amethyst, emerald, and pearl; five kinds of leaves (*pañchapallavas*), *viz.*, the four figs and the mango; and the seven kinds of earth (*saptamṛittikâ*), *viz.*, from an elephant's stable, from a horse's stable, from a king's gate, from under the *khaskhas* grass (*Andropogon muricatum*), from where four roads meet, from a cow's stable, and from an anthill. The whole is then worshipped with saudal-wood, flowers, grains of rice, turmeric, red and scented powders, with offerings of sweet dishes, the waving of incense, a lighted butter-lamp and camphor. The sacrificial fire is then lighted and fed with wood of the *khair* (an Acacia), sesamum and clarified butter; a prostration before it is made with a low bow and joined hands, and forgiveness is asked. By this act the worshipper is blessed with long life, wealth, victory, health, prosperity and posterity."

The Beharis also entertain many superstitious beliefs about the common house-lizard, and draw omens from its fall on the body of a person or elsewhere. If it falls on the right side of a person of the sterner sex, it is believed to prognosticate evil to that man. On the other hand, if it falls on his left side, the omen is regarded as auspicious. If it, however, falls on the left side of a female, it is considered inauspicious; whereas its fall on the right side of a woman is considered to betoken good to her. The touch of the lizard is considered polluting. If this reptile falls on the body of a person, the person polluted has to bathe and, after changing his wet clothes, has to touch wheat, salt or gold and give away the touched wheat, salt or gold to a Brāhman. If the polluted person be a man of ordinary means, he, after bathing and changing his clothes, has to touch wheat and salt and give the same away to a Brāhman. If he be a wealthy man, he can touch gold, after performing the necessary ablutions, and give away the same to a Brāhman. The person polluted by the touch of the lizard is thus rendered clean after the performance of the aforesaid ceremony.

The following is another Behari account, in Hindi, of certain omens to be drawn from the fall of a house-lizard on a person's body, or from its climbing up his body, and of the charm for preserving him from the evil effects likely to result from the climbing up of the lizard up his person:

अगर बिकुतिया उपर से कौसि चीज़ से कौसि अरुस मर्द या

औरत के कौसि बदन पर गीरे तो शुभ है याने अगर वह ग्रस्त बिमार होय तो बिमारी छूट जाय वो वह अगर बिमार न हो तो उस को कुछ लाभ हो।

अगर बिकुतीया निचे से किसी ग्रस्त के उपर चढ़ जाय तो आरोग्य आदमी बिमार पड़े या कोई दूसरा नुक़्सानी होय। निर्वाह* इस का यह है के जब बिकुतीया बदनपर चढे तो सवासेर नीमक सेंधा छू करके ब्रह्मन को दे देवे॥

TRANSLATION.

If a lizard falls from anything above on any part of a man's or woman's body, the omen is an auspicious one. That is to say, if the person touched be suffering from any disease, he will be cured of that disease. If he be in sound health, he will gain something.

If a lizard climbs from the ground up a person's body, the person touched, if he be in sound health, will fall ill or suffer some kind of loss. The charm for preserving one's self from all these evils, is prescribed as follows:—The person on whose body the lizard has climbed from the ground, should touch one and one-fourth seer of rock-salt and give it away to a Brāhman.

A good deal of folklore has also gathered about the large Water-Lizard of Northern India, (*Varanus bengalensis*, Daud.). In Bengal it is known as *go-sāp*, and in Behar as *gohti*. Among the Beharis it is believed that if a *gohti* or water-lizard bites a person on a Sunday or Tuesday, the person bitten becomes unconscious with the rapid spread of the venom in his system, but regains consciousness and is cured of the bite if the *mantra* or incantation for the cure of such bites is uttered even once only. If a water-lizard breathes on a person's navel on a Sunday or Tuesday, his belly gets swollen. The same belief is also entertained in Bengal where it is believed that, if a water-lizard spits its saliva on a person's body, his body will get swollen.

The young of the water-lizards (*Varanidæ*) are often called *biscobra*, and are considered venomous, probably on account of their possessing a forked tongue. Both the Indian species of the genus *Eublepharis* (*Eublepharis hardwickii*, Gray, and *E. macularius*, Blyth) are also called *biscobra* and considered as highly poisonous, even more deadly than the cobra itself, by the natives of this country. The bite of the *biscobra* is considered to be so venomous that it is supposed that no

* निर्वाह means a "remedy" or "charm."

antidote will counteract against its poison. This reptile is supposed to feed upon poisonous plants and thus to become more poisonous than the plants it feeds upon. The belief in the venomous character of the *biscobra* appears to be based on an exaggerated idea of the acrid and burning properties of the secretions of these lacertilians, akin to the absurd notions about the venomous qualities of the toad, which are prevalent among the ignorant and vulgar people of Europe. It is now one of the foregone conclusions of zoological science that the *Varanidæ* have no fangs or poison glands, though there exists in Mexico a lizard, scientifically known as the *Heloderma suspectum*, Cope, which possesses poison-glands, and has been found, from experiments made with it, to be highly poisonous.

Similar to the beliefs about the *biscobra* are the fables current among the ancient Greeks and Romans about the Salamander. Aristotle, Theophrastus, and Dioscorides call it Salamandra and describe it as a kind of lizard of an acrid and poisonous nature. Dioscorides states that contact with it blisters the skin. The Roman naturalist Pliny (20, 23) says:—"But of all venomous animals it is the Salamandar that is by far the most dangerous; for while other reptiles attack individuals only, and never kill many persons at a time—not to mention the fact that after stinging a human being they are said to die of remorse, and the earth refuses to harbour them—the Salamandar is able to destroy whole nations at once, unless they take the proper precautions against it. For, if this reptile happens to crawl up a tree, it infects all the fruit with its poison, and kills those who eat thereof by the chilling properties of its venom which, in its effects, is in no way different from aconite. Nay, even more than this, if it only touches with its foot the wood upon which bread is baked, or if it happens to fall into a well, the same fatal effects will be sure to ensue. The saliva, too, of this reptile, if it comes in contact with any part of the body, the sole of the foot even, will cause the hair to fall off from the whole of the body."*

The lizard is also the subject of much superstitious belief among the Malayo-Polynesian races of people. Professor Wilken of the University of Leyden has published in the *Journal* of the Asiatic Society of the Hague, an elaborate essay on the Malayo-Polynesian superstitions about lizards. It would, indeed, be an interesting study for folklorists to trace out the way by which so many superstitions have come to be gathered about that harmless little reptile, the lizard.

In Ceylon and other Tamil-speaking countries, the lizard also bears high reputation as a prognosticator of good or evil to man, as will appear from the Tamil proverb which says that "*the lizard which*

* *Vide* the *Journal of the Anthropological Society of Bombay*, Vol. II., pp. 95-96.

was the oracle of the whole village has fallen into the broth-pot."* Its chirping is looked upon as an unfailing omen.†

In Burma, the figure of a lizard is regarded as a charm against danger. The Burmese have almost always tattooed on their arms, back, chest, and even on the top of their heads which are shaved for this purpose, some charms in the shape of figures of lizards, birds, mystic words and squares, rings, images of Buddha, and sometimes merely a few scattered dots. The tattooed charms are supposed to render a person insensible to pain when beaten, and to protect him from snake-bite, musket-shots, drowning, the spells of wizards, and evil spirits.‡

It would appear from the items of folklore stated above that (1) the lizard is looked upon as a prognosticator of good or evil to man as in Bengal, Bombay, Tamil-speaking countries and Ceylon; (2) its touch is, under certain circumstances, and on certain parts of the body, considered polluting, the person touched being supposed either to fall ill, or to suffer from other misfortunes, as in Bengal and Bombay; (3) it is considered as a protective against dangers from various sources as in Burma; (4) and medicinal properties are ascribed to its oil, blood and its tail.

All these superstitious beliefs about the lizard appear to be of a totemistic origin. The lizard was most likely the totem of the Indian races and of the Burmese, referred to above, who look upon it as a prognosticator of good or evil to them and as a protector against all danger; as it is the totem of the New Caledonians at the present day, among whom a child is warned not to kill a lizard, lest it should happen to be his own ancestor,§ and of the inhabitants of the island of Samoa, one of whose gods is incarnate in the *lizard*, the owl, and the centipede, and another in the turtle, sea-eel, octopus and *garden lizard*. Mr. J. G. Frazer conjectures that these Samoan deities are tribal or phratric totems, with the totems of the tribal or phratric subdivisions tacked on as incarnations.‖ The connection between a tribe or clan and its totem is reciprocally beneficent; the totem protects the tribe or clan, and the tribe or clan shows its respect for the totem in various ways. The totem gives his clansmen important information by means of omens. Among the Coast Murring tribe of New South Wales, each man's totem

* This proverb is sarcastically quoted when some person, professing to be wise, injures his own reputation by a misadventure.

† *Demon-Worship in Ceylon.* Madras: Christian Vernacular Education Society, 1891, p. 21.

‡ *Charms and Mantras.* Madras: Christian Literature Society, 1892, p. 3.

§ M. F. Cox's *Introduction to Folklore.* London: David Nutt, 1897, p. 100.

‖ Frazer's *Totemism.* Edinburg: A. & C. Black, 1887, p. 88.

is believed to warn him against his foes. The Kurnais of Victoria look upon the crow as one of their ancestors, and think that it looks after their welfare and replies to their enquiries by cawings. Among the islanders of Samoa, their totems are supposed to communicate to them warnings by omens. Thus if an owl flew before the Owl clan, as they marched to the battle-field, it was considered as an omen inciting them to advance onwards, but if it flew across their path, or backwards, it was looked upon as an omen warning them to beat a retreat. The appearance of the totem in or about the house was by some clans regarded as an omen of death; they interpreted his appearance as signifying that the totem had come to fetch his kinsman.*

There is thus much evidence to lend some colour of plausibility to the theory that the lizard, as the totem of the Indian races referred to above, and of the Burmese, communicates important information by means of omens, to its clansmen. They, therefore, look upon the lizard as a prognosticator of good or evil. As among the Samoans, the appearance of the totem in or about the house was interpreted as an unfavorable omen signifying death, and that the totem had come to take back his clansman to the infernal regions; so, by a modification of this belief, we may conceive of a people in the lower culture as looking upon the touch of a totem as polluting, or indicative of sickness or impending misfortune.

As the totem exercises beneficent care over its clansmen, the clansman, on his part, assimilates himself to the totem by representing the totem on his body by tattooing, in order to put himself the more effectually under the protection of the totem.† This may explain why the Burmese tattoo on their persons the figure of their totem—the lizard—as a protective against danger from various sources. But it is difficult to explain why medicinal properties are ascribed to the lizard's oil or blood or to its tail. The theory of the totemistic origin of superstitions about lizards does not fit in with the beliefs in the medicinal properties of the lizard, for a clansman is strictly forbidden to kill his animal-totem. Whether this latter belief has its origin in the existence of real therapeutic properties in the lizard's oil or blood or its tail, or owes its evolution to some other cause, I leave to the learned to explain.

* *Op. cit.*, p. 23.

† Frazer's *Totemism*, p. 26.

V.—Scraps of Hindu Folk-lore.—By Pandit Rāmgharib Choube, *Late Pandit to W. Crooke, Esq., I.C.S., (Retired), Editor of the "North Indian Notes and Queries." Communicated by the Anthropological Secretary.*

[Received 31st March; Read 6th April, 1898.]

I. Ancestor-worship.—A curious form of ancestor-worship is prevalent at Benares among Hindus of all classes but the lowest. When a male child is born in a family, the father of the new-born child rushes headlong to the mother Ganges and jumps into it. He then begins to repeat the names of his ancestors and throw water upwards, apparently believing that his ancestors in heaven are receiving the oblations of water thus thrown up by him. His nearest relatives and friends are also invited to do likewise in company with him. If a child is born at dead of night, this compulsory ceremony must be performed then even at all risks to the health of the father. It is believed by an average Hindu that a male child is the fruit of the propitiation of ancestors. I have heard often from my grandmother, who is on the shady side of seventy, that my father loses his sons in infancy because he does not perform the annual *Srādh* ceremony in *Kuar* or September regularly. My father took this taunt much to heart, and now performs the ceremony periodically without fail. My life is said to be the result thereof.

II. Ancestors as Messengers of Death.—It often happens that cats mew at dead of night in a house perhaps from pain either mental or physical. But to the old Hindu woman, the cat is not a cat but an ancestor disguised as a cat; and the mewing is not an ordinary cry of pain but an ominous cry betokening death. When this call is repeated on several successive nights, the old Hindu woman cannot help breaking this unhappy news first to the younger ladies of the family, who are generally the managers of the household, and then by and bye to the male members, who, terrified on account of superstitious awe, at once take the counsel of the old matron as to what should be done to avert the impending danger. The usual method of averting the danger is that on Tuesday the old lady prepares all sorts of *Kachchi** and

* *Kachchi* dishes are rice, *dáll* (pulse-soup) and *chápátties* or hand-made bread of a flat shape. These dishes can be taken by a person of higher caste (such as a Káiyasth), only when these are prepared by a Brâhman or by one's own self or relative. If these are prepared by a low-caste servant, these cannot be taken by a person of higher caste.

*Pakki** dishes, and, in a corner of the kitchen-house, serves them out on leaf-platters and offers them to ancestors in general. That food is then given to the male members of the family, but never to females, for females are held to be naturally impure. The impurity of women is a well-known fact in Ethnology, and need not be explained.

III. Hindu Folk-lore about Birds.—The Hindu is a very superstitious being from his very cradle. The cuckoo (*koel*), the crow, the *nilkanth*, the *khanjan*, the pigeon, the owl and the kite are ominous birds in some way or another to a Hindu. The following are some examples of Hindu folk-lore about the birds :—

1. *The cuckoo.*—When it sings on a tree that stands by your house, it is said to foretell the arrival of a much-wished-for relative long absent from home.

2. *The crow.*—If the crow perches on your thatch and caws, and if on one's asking whether such and such a relative will arrive that day it flies away, one must be sure that the relative will surely come. On the contrary, if it remains perched on the thatch, the relative will not come.

3. *The "nilkanth."*†—The *nilkanth* is a messenger of Sitāji, the most virtuous wife of Rām Chandra, the hero-god of the Hindus. When the Hindu villager catches a glimpse of this sacred bird, he bursts forth suddenly in a very pious tone :—

Nīlkanth nilwāri bārī ;
Sitā se kahi diho bheṇt aṇkwārī.

नीलकण्ठ निलवारी वारी ।
सीता से कहि दीह भेंट अँकवारी ॥

"O ! Nilkanth, thou residest in the green garden. Give Sitā my best compliments."

4. *"The khanjan."*‡—This bird plays a still more important part in Hindu folk-lore, as it is associated with the agriculture of the country. The Hindu says that it is sent by Rām to see if the agricul-

* *Pákki* dishes are articles of food fried in *ghee* or clarified butter, such as *purees* (fried pancakes), curries, pastry, sweetmeats, &c. &c. These can be taken by a person of higher caste, even if they be prepared by a servant of lower caste from whose hands the former can drink water. This classification of food into *káchchi* and *pâkki* is made only by the Hindus of Behar and the North-Western Provinces, but is wholly unknown among the Bengali Hindus.

† The *Nilkanth* is the bird known to naturalists as the Indian Roller (*Coracias indica*, Linn.). It is also known to Europeans in India as the Blue Jay.

‡ The scientific appellation of the *Khanjan* is *Motacilla maderaspatensis*, Gmel. It is called the 'Large Pied Wagtail' in English.

ture of the country is in a flourishing or in a decaying condition. When it returns, God arranges for the next season's crops. When it first appears in *Kuar* or September, the Hindu ascertains his fortunes for the following agricultural season from its sight. If he sees it on the bank of a river when he is standing facing the east or north, it forebodes good fortune for him. If he sees it on a cow, or on the top of the hood of a snake while it is flowing with the current of a river holding a frog in its mouth, it is a very good omen. The man is sure to become a king or to attain to kingly power within the ensuing year.

5. *The pigeon.*—Is an unlucky bird. It wants that the number of its own progeny should increase. The big house under the thatch of which it dwells, becomes deserted in course of time. So the superstitious Hindus do not keep them.

6. *The owl.*—When this bird hoots near a house or in any locality, some one in the house or in the locality, as the case may be, is sure to fall ill and die in a week's time. Its popular name is "*Muakawā chiriyā*" or "slaughtering-bird," in the district of Gorakhpur.

7. *The kite.*—If in a journey, you come across a kite with its bill white, you are sure to gain the object of your journey.

VI.—Human Sacrifices in Ancient Assam.—By E. A. Gait, I. C. S.

[Received and Read 2nd March, 1898.]

The existence in Assam in ancient times of the practice of offering human sacrifices has often been noticed; but so far as I am aware, no detailed account has ever been given of the extent to which the practice prevailed, and the manner in which such sacrifices were carried out.

The practice is known to have been common among most of the tribes in this Province of aboriginal origin. In many cases, it seems to have been more or less closely connected with the rites enjoined in the *Kālikā Purāṇa* and the *Cava Sādhana*, *Kāli rahasya*, and *Kāli Tantra*.

I. Human sacrifices amongst the Koches.

The prevalence of the custom of offering human sacrifices amongst the Koches is known to us from a statement in the Vaṁçāvali of Rāja Lakṣmi Nārāyaṇa Kuar, of which a full summary was given in my Paper on the Koch Kings of Kāmarūpa, which was published in Volume LXII of the Journal of this Society (Part I, page 268). It is stated in this Vaṁçāvali that, when Rāja Nara Nārāyaṇa rebuilt the temple of Kāmākhya in 1565 A. D., he celebrated the occasion by the sacrifice of no less than a hundred and forty men, whose heads he offered to the goddess* on salvers made of copper. It is not stated there how the victims for the sacrifice were obtained, but it appears from the *Haft Iqlīm*† that on some occasions at least persons were found willing to come forward as voluntary victims. Such persons were known as Bhogis, and from the time when they announced that the goddess‡ had called them, they were treated as privileged persons. They were allowed to do whatever they liked, and every woman was at their command, until the annual festival came round, when they were sacrificed to the goddess. Some members of the family of the Darrang Rājas, who migrated to Nowgong and ruled the country between Roha and Dharamtul, are said to have offered an annual human sacrifice, the victim being any person of sound health and body who might be caught abroad after midnight.

* Kāmākhya is one of the three deities to whom the offering of human sacrifices is enjoined in the *Kālikā Purāṇa*.

† *Apud* Blochmann, J. A. S. B., 1873, page 240.

‡ The name of the goddess is there given as Āi (mother), and she was said to reside in a cave.

II. Amongst the Kachāris.

In Kachar, there is a legend that Rāja Nirbhar Nārāyaṇa, the 45th Kachāri king, according to the traditional list of kings, was a very pious man. One day, while meditating in the temple, he heard a voice which said that if he would go to the river next morning at daybreak and catch hold fearlessly of whatever he might find there, he would obtain the object of his worship in living form. On proceeding to the river, the king saw a poisonous snake swimming towards him; he caught hold of it, whereon it twisted round his arm, and the king being alarmed tried to shake it off. On this, the snake changed into a sword, and the king took it to the temple, where he lamented the loss which he had sustained through his fears. Soon he heard a voice which told him that, owing to his timidity, the object of his worship had assumed the form of a sword; he was told to name it "Raṇa Chaṇḍi," to worship it regularly, and to offer human sacrifices to it annually. To this origin is the practice, which undoubtedly prevailed, of offering human sacrifices ascribed in the Kachāri Rāj. The victims were Hindus of any caste, other than Brahmaṇs, who were kidnapped for the purpose from places outside the Hiḍamba Rāj. One of the principal places where such sacrifices were offered was the temple of Kāchā Kānti near the present Udharband bāzār, and the remains of a masonry well into which the heads were thrown is still to be seen. The ceremony was performed by a family of Brahmaṇs resident at Udharband, who were known as Desmukhiyas. The practice is said to have been put a stop to in the reign of Rāja Kriṣṇa Çandra, in consequence of a Brahmaṇ having narrowly escaped being sacrificed by mistake.* The Kachāris of the Nowgong district are said to have been in the habit of sacrificing a human being once a year to Mahāmāyā for the good of the Rāja at a Thān halfway between Doboka and Sonārijān. A human sacrifice was also offered yearly at the Cāriblian Thān near Gobhā, the victim in this case being some person who had come to Dātipār for purposes of trade. He was kept in close custody for 15 to 16 days, and then decked with jewels and flowers and decapitated before the goddess Kesāi Khāti, after which all the people present fled headlong down the hill to avoid being devoured by the hungry gods and goddesses.

III. Amongst the Chutiyas.

From a very early period, the practice of offering human sacrifices was common amongst the Chutiyas, the pre-Āhōm rulers of Upper

* The same story is told as accounting for the partial discontinuance of the practice of offering human sacrifices in Jaintia.

Assam, whose priests or Deoris were in the habit of offering human sacrifices at the Copper Temple at Sadiya and elsewhere, the object of their worship being Durga under the name of Kesāi Khātī, the eater of raw (human) flesh.* These sacrifices were offered on certain stated occasions, and also to avert special calamities, such as cholera, small-pox, and drought.

After the subjugation of the Chutiyas by the Ahōms, the Deoris were still permitted to continue their ghastly rites, but they were usually given, as victims, criminals who had been sentenced to capital punishment. When none such were obtainable, a particular section of the population or *khel* (known as the *Baruāli Khel*) was called upon to produce one, in return for which certain privileges were granted to the members of the *khel*. On a woman of the *khel* becoming pregnant, the astrologers were called on to say whether the child would be a boy or a girl, and if they predicted that it would be a boy, the mother was carefully looked after, and the child was anointed, as soon as it was born, with a paste made of tamarind and *mātikalāi* (*Phaseolus radiatus*). When a sacrifice was thought necessary, volunteers were called for, and some person usually came forward of his own accord; if not, a victim was taken by force. In either case, the victim was shaved, anointed with the paste of tamarind and *mātikalāi*, and decked with gold and silver ornaments. He was then conducted before the image of the goddess, when he prostrated himself, and was promptly decapitated by the Bar Deori or High Priest. The body was left on the spot until the following morning, when it was removed. Victims were taken only from amongst the juvenile male members of the clan; on attaining full age, they became exempt, and were allowed to marry and settle down. According to Dalton, it was necessary that the victims to be immolated should be of pure caste and perfect form, the slightest blemish or mutilation rendering them unfit to be offered to the goddess. Brahmaṇs and

* See Assam Census Reports, 1881 and 1891. Dalton, who gives a very full account of this revolting practice amongst the Chutiyas, conjectures that the sacrifices were originally offered to some aboriginal deity, and that it was only when the influence of Hinduism began to be felt that the name was changed to Durga. In support of this view, he points to the fact that the officiating priests were members of a Mongolian tribe, and not Brahmans, but this argument may easily be pressed too far. We know that all the lower castes are ministered to by caste, and not by true, Brahmans, and the same might easily be the case amongst the Chutiyas. It is only in comparatively recent years that the Chutiyas and Āhōms have in large numbers embraced orthodox Hinduism and placed themselves under the protection of Gnçāins, but we now know that the beliefs which they professed prior to this formal conversion were very largely of a Hindu character. This subject, however, is one that requires separate treatment.

members of the royal family were exempted as a privilege; Doms, Hāris, Musalmans and women were excluded as unfit.

For some time preceding the sacrifice, the victim to be immolated was detained at the temple, where he fared sumptuously, till in sufficiently plump condition to suit the supposed taste of the Guçānī. On the day appointed, he was led forth, magnificently attired and decorated with gold and silver ornaments, to be shown to the multitude that assembled on the occasion; he was then withdrawn and led by a private path trodden only by the officiating priests and their victims to the brink of a deep pit, where he was divested of his fineries and decapitated, so that the body fell into the pit. The head was added to a heap of ghastly skulls that were piled in view of the shrine.

IV. Amongst the Tipperas.

Several references are made to human sacrifices in the *Rājmāla* or chronicles of the kings of Tippera. It is there related that Deva Māṇikya, who reigned from 1522 to 1535 A. D., offered up some slaves as a sacrifice to "the fourteen gods," but the sacrifice was not accepted, and the chief priest (*chontai*) announced that Mahādeva had ordered the sacrifice of the best commanders of the army. Deva Māṇikya obeyed, and gave up his eight best commanders to be immolated. His successor, Vijaya Māṇikya (1535 to 1583 A. D.), it is said, on two occasions defeated the Musalmans, and offered the Pathans and others who had been taken prisoners as sacrifices to "the fourteen gods." The fourteen gods to whom sacrifices were usually offered were Hara, Umā, Hari, Mā, Bāṇi, Kumār, Gaṇak, Sikhi, Kāma, Himādri, Bidhu, Kha, Abdhi, and Gaygā. Sacrifices were also sometimes offered to other gods. Thus Rājeçvar is said to have offered up three human victims to Çiva when praying for a son, and Dhana Māṇikya Deva (1439–1515 A. D.), when defeated by the Musalmans, sacrificed a chaṇḍāla boy to Bhabāchari.

V. Amongst the Nāgas.

Head-hunting is common enough amongst the Nāgas, but it is not generally known that human beings are also frequently killed for sacrificial purposes. I have received the following interesting note on this subject from Mr. A. W. Davis, I.C.S., who was till recently Deputy Commissioner of the Naga Hills district:—

"There can be no doubt that all the tribes in this district consider that by killing a human being in certain cases they are doing the most effectual thing towards averting the displeasure of some particular evil spirit (*terhoma*). Amongst the Angāmis especially this idea is very pre-

valent, and there have been two cases of murders committed within the last five years near Kohima, the only object of which was to propitiate an evil spirit. I will describe these cases in detail."

"(*a*) *Kigwema case.*—In the autumn of 1891, small-pox, which was very prevalent, attacked the two lower *khels* of Kigwema village, and a large proportion of the inhabitants died. The two upper *khels*, the people of which had been all vaccinated, remained free of the disease. As, however, Nāgas had at that time but little faith in vaccination, the people of these two *khels* determined to make themselves as safe as possible. A village council was, therefore, called, and it was decided that four men should be sent out to bring in a head as offering to the "*terhoma*" in order that the plague of small-pox might be averted. Four men were accordingly sent. They went and lay in wait by the cultivation path of a neighbouring village, and killed a woman, a small boy and the baby he was carrying as they were returning alone from their fields. The baby's head and an ear each from the other two were cut off, carried away, and buried in the vicinity of the murderers' village. This murder was, from the Nāga point of view, eminently successful; the angry deity was appeased, and the two upper *khels* of Kigwema remained exempt from the disease, which decimated the two lower *khels*. A similar case under exactly similar circumstances is said to have occurred at the village of Jakhama near Kigwema during the previous epidemic of small-pox which occurred about 20 years ago."

"(*b*) There is a very general superstition amongst the Angāmis and Semas that to kill a human being and place a small portion of the flesh in the murderer's fields is a specific to ensure a good crop, and this is said to have been the reason that prompted certain men of Purobami to murder two men, a woman and a child near the Sijju river towards the end of 1895. The two men were partially scalped, while the child was taken away alive and killed outside the village. Murders like these partake of the nature of sacrifices, as their object is to avert disaster and so to ensure good crops."

"Before we annexed their country, the Aos were great slave-owners, and these slaves were occasionally made use of for a semi-sacrificial purpose, *e.g.*, two villages are at war and are desirous of making peace. It is found that one side has taken more heads than the other. To make things equal and as a sacrifice to the spirits of the dead who have gone unavenged, an agreement would be arrived at that the village which had taken the fewest heads should receive one or more slaves from the other village. These slaves were bound and left at a spot agreed upon beforehand. There they were found by the young men of the receiving village, who killed them and carried off their heads in triumph. Thus were the

spirits of their dead restrained from troubling the living. A case of this kind, in which Kanching gave, and Ungma village received, slaves, occurred not very long before we took over the Ao country."

"I have been frequently told by Aos that human sacrifices are not infrequent among certain of the trans-Dikhu tribes. The method is said to be as follows:—When the village *jhūms* are ready for firing, a slave is tied up in the middle of them. The *jhūms* are then lighted, and the slave is burnt to death. A sacrifice like this ensures a good crop."

Beyond the frontier, also, the practice is not unknown, and in his report on an expedition made in 1888 to explore the country between Assam and the Hukong Valley, Mr. Needham writes as follows:—

"The whole of the Nāgas residing on the south of the Pātkoi range are designated Râŋgpâŋ Nāgas, and those on the north side Gūm'lans, and the terms are used by the Nāgas themselves as well as by our plains people, when speaking about either tribe."

"The Râŋgpâŋs are all human sacrificers, but not so the Gūm'lans, and the skulls of their victims may be seen hanging up under the eaves in the front verandah of their houses. The custom is not a yearly one, owing chiefly, I suppose, to the difficulty of procuring a sufficient number of victims, and on the score of expense, for the ceremony entails the killing of numerous buffaloes, or cows, pigs, fowls, etc., and the giving of a huge feast, to which many kinsmen and friends, even from a distance, have to be invited, but is performed about every 9 or 10 years, in, I believe, propitiation for health, good weather, good harvests, and victory over enemies. As, in addition to the live stock required for the feast given on these occasions, the expenditure of rice, both for food as well as for brewing liquor, is very great, the ceremony is one which is usually performed after a bumper harvest."

"Sometimes enemies taken in battle, but oftener slaves, who have to be purchased, are sacrificed. The sacrificial *modus operandi* was thus briefly described to me. The victim, having been tied hands and feet, is made to stand on the edge of the front verandah of the sacrificer's house, and his (or her) hair having been seized, and the head forcibly pulled forward and bent downward, a man, hitherto hidden from view, steps out from one side, and severs it from the trunk with one stroke of his Singpho knife, one of which every Nāga carries. As soon as the head has been severed, four or five near relations or kinsmen of the sacrificer rush forward, seize the trunk, cut open the chest, and rummage about for the heart, and the one who succeeds in getting hold of it first is looked upon as a very lucky person. After this, the fingers and toes are cut off, and stuck on pointed slips of bamboos close to the sacrificer's

house, where they remain until they rot away, and the body is thrown away up hill to propitiate the hill sprite."

"The head is cleaned of its flesh, and the pieces having been buried close to the sacrificer's house, a stone is placed over the spot, and a piece of a prickly shrub called *Moga phun* (*phun* means a tree in Singpho) by the Singphos, which bears a red berry about the time of the *Bihu*, is planted close to it."

"If the victim has been purchased by a subscription among several relations, and this is apparently a common event, the skull is divided among them, the man giving most money getting the lion's share to decorate (?) his house with. One sex is as good as another for sacrificial purposes, and a child, however small, provided it has cut all its teeth, is as good as an adult. If the victim's hair is long and worth keeping, it is used to ornament hats, etc.; if not, it is thrown away. Women and children are permitted to witness the disgusting ceremony, and at night singing and dancing, to which all are invited, goes on until a late hour."

"I am told that victims are sometimes given large quantities of *mod* shortly before the time fixed for sacrifice, and, if so, this is perhaps the one redeeming point in the disgusting and cruel ordeal, for it shows that a touch of pity exists even in the breast of a Nāga savage."

Amongst the Khongji Nāgas of Manipur, human sacrifices are offered when a chief is buried. The dead body is kept on a platform till a victim is obtained. The latter is then decapitated, and his head buried with the body of the chief.

VI. Amongst the Manipuris.

It is said that the practice of offering human sacrifices in Manipur died out when the people were converted to Vaiṣṇavism, but this is doubtful, and to this day, when cholera breaks out or drought occurs, the people are liable to panic owing to occasional rumours that victims are being sought for sacrifice to the sylvan deities.

In Chapter II of the *Tikha Kalpa*, a manuscript *puthi* found in the Manipur State library, the following passage occurs:—

"Human sacrifices are to be made, after the royal consent has been obtained, on the occurrence of public calamities, such as war, or for the purpose of obtaining great wealth. * * * * A Brahman or a woman should never be sacrificed. Neither should one sacrifice his own body, as then he will be guilty of the sin of suicide. A brother, a father, a son, a wife's brother, a sister's son, a maternal uncle, none of these should be sacrificed; nor any one who is acquainted with the Vedas, or has renounced the world, or is a student, or belongs to the royal family. An enemy, a sick person, an eunuch, one who is infirm or has defects or

scars should not be offered. The victim should be bathed and properly decorated, and then brought before the goddess. The person offering the sacrifice should turn his face towards the north, and the victim should face the east. Water should then be sprinkled on the victim, and the following *mantra* uttered :—

Oh goddess living on the golden mountain, I offer this sacrifice to thee! He is good and stout and without blemish. I bind him to a post! I offer this sacrifice to remove my misfortune. Oh goddess, accept him. Although I kill him, I give him salvation."

VII. Amongst the Jaintias.

In the case of Jaintia, a very full account of the practice has been sent me by Babu Giriç Candra Dās, Assistant Settlement Officer. It appears that human sacrifices were offered annually on the *Sandhi* day in the month of Āçvin (*Cukla paksa*) at the sacred *pîṭha* in the Fāljur pargana.* They were also occasionally offered at the shrine of Jainteçvarî at Nijpāt, the capital of the country. As stated in the *Haft Iqlīm* to have been the case in Koch Behār, so also in Jaintîa, persons frequently voluntarily came forward as victims. This they generally did by appearing before the Rāja on the last day of Çravan, and declaring that the goddess had called them. After due enquiry, if the would-be victim or *Bhoge khāora* were deemed suitable, it was customary for the Rāja to present him with a golden anklet and to give him permission to live as he chose, and to do whatever he pleased, compensation for any damage done by him being paid from the royal treasury. But his enjoyment of these privileges was very short. On the Navami day of the Durga Puja, the *Bhoge kháora*, after bathing and purifying himself, was dressed in new attire, daubed with red sandalwood and vermilion, and bedecked with garlands. Thus arrayed, the victim sat on a raised dais in front of the goddess and spent some time in meditation (*japa*) and in uttering *mantras*. Having done this, he made a sign with his finger, and the executioner, after uttering the usual sacrificial *mantras*, cut off his head, which was placed before the goddess on a golden plate. The lungs were cooked and eaten by such *Kāndrā yogis* as were present, and it is said that the royal family partook of a small quantity of rice cooked in the blood of the victim. The ceremony was usually witnessed by large crowds of spectators from all parts of the Jaintia parganas.

Sometimes the supply of voluntary victims fell short, or victims were needed for some special sacrifice promised in the event of some desired occurrence, such as the birth of a son, coming to pass. On such

* This is one of the 51 *pîṭhas*. Sati's left thigh is said to have fallen there.

occasions, emissaries were sent to kidnap strangers from outside the Jaintia Rāj, and it was this practice that eventually led to the annexation of the country by the British. In 1821, an attempt was made to kidnap a native of Sylhet proper, and while the agents employed were punished, the Rāja was warned not to allow such an atrocity to occur again. Eleven years later, however, four British subjects were kidnapped in the Nowgong district and taken to Jaintia. Three of them were actually sacrificed, but the fourth escaped and reported the matter to the authorities. The Rāja of Jaintia was called on to deliver up the culprits, but he failed to do so, and his dominions were in consequence annexed in 1835.*

VIII. Amongst the Khāsis.

The practice of human sacrifices amongst the Khāsis is fully explained in the following extract from the Resolution by the Chief Commissioner of Assam on the Administration Report of the Khāsi and Jaintia Hills district for the year 1881-82 :—

"Among the cases tried this year, were three murders of singular atrocity; two of them committed on inoffensive old women, and one on a boy: in none of them was any adequate cause alleged, and at least two of them are believed to have been connected with the very remarkable superstition of the *Thlen*. Tradition is that there was once in a cave near Cherrapunji† a gigantic snake, or *Thlen*, who committed great havoc among men and animals. At last, one man, bolder than his fellows, took with him a herd of goats, and set himself down by the cave and offered them one by one to the *Thlen*. By degrees the monster became friendly, and learnt to open his mouth, at a word from the man, to receive the lump of flesh which was then thrown in. When confidence was thoroughly established, the man heated a lump of iron red-hot in a furnace, induced the snake, at the usual signal, to open his mouth, and then threw in the red-hot lump, and so killed him. He then cut up the body and sent pieces in every direction, with orders that the people were to eat them. Wherever the order was obeyed, the country became free of the *Thlen*, but one small piece remained which no one would eat, and from this sprang a multitude of *Thlens*, which infest the residents of

* Strictly speaking, the plains portion only was annexed, but on this being done, the Rāja expressed his unwillingness to retain the hills portion, and so this tract also was incorporated in British territory.

† This cave is some five miles west of Cherrapunji, close to a great waterfall called *Noh kalikai*, where there is a huge block of stone, which somewhat resembles a serpent with some cuts over it, and is known as *Dain Thlen* = "snake cut to pieces."

Cherrapunji and its neighbourhood (including Shillong). When a *Thlen* takes up its abode in a family, there is no means of getting rid of it, though it occasionally leaves of its own accord, and often follows property of the family when given away or sold. The *Thlen* attaches itself to wealth, and brings prosperity and wealth to the family, but on the condition that it is supplied with blood. Its craving comes on at uncertain intervals, and manifests itself by sickness among the family, by misadventure or increasing poverty. It can only be appeased by the murder of a human being. The murderer takes the hair, the tips of the fingers, and a little blood from the nostrils, caught in a bamboo tube, and offers these to the *Thlen*. The belief is that the demon then appears in the form of a snake and devours the body of the murdered person, which is materialised from the portions thus offered. After this, its craving is satisfied for a time and the affairs of that house prosper. Many families in these hills are known or suspected to be *Ri-thlen*, or keepers of a *Thlen*, and are dreaded and avoided in consequence. Whenever a dead body is found with the marks above described on it (and particularly if it is killed with no wound, but by twisting the neck), it may be presumed with almost absolute certainty that the object of the murder was to appease a *Thlen*. This happened in one of the three instances referred to: in the others these marks were not found, but, in the absence of any other cause for the murder, it was more than probable that it was due to this dreadful superstition. In each of the three cases one or two persons (though perhaps not all the accomplices) were convicted; one man was hanged, and the rest were sentenced to transportation for life or for a term of years."

Conclusion.

The above is a summary of all that I have been able to gather regarding the custom of sacrificing human beings in Assam. I have not referred to the taking of life for other than sacrificial purposes, and so no reference has been made to the practice of head-hunting so common amongst many of the hill tribes, or to the old Āhōm custom of slaughtering all prisoners taken in battle and making of their heads a chaplet of skulls. Neither have I attempted to discuss the subject of human sacrifices generally, or to trace its origin, as these general questions have already been dealt with by more competent hands.*

* *Cf.*, *e.g.*, the late Dr. Rajendra Lala Mitra's Paper in the J. A. S. B. for 1876, page 76, and the Article on Sacrifices in Balfour's Cyclopædia of India and the works quoted at the end of that article.

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Vol. LXVII. Part III.—ANTHROPOLOGY AND COGNATE SUBJECTS.

No. II.—1898.

VII.—*Bengali and Behari Folk-lore about Birds. Part I.*—*By* ÇARAT CANDRA MITRA, M.A., B.L., *Corresponding Member of the Anthropological Society of Bombay. Communicated by the Anthropological Secretary.*

[Received 25th April; Read 6th July, 1898.]

1. *The Crow* and *the Raven*:—The Crow and the Raven are regarded in Bengal and Behar as birds of ill-omen. This is, perhaps, due to their feeding upon carrion. The *Dāṁḍ Kāk* or the Indian Raven (*Corvus macrorhynchus*) is superstitiously believed in Bengal and Behar to be a messenger of death. Its croaking is believed to prognosticate death. Whenever people in Bengal hear the cry of the raven, they cry out "আংগ্ বটো দিয়ে নাক কাটবো গংগাজলে মুখ ধুগে যা," that is to say, "we will cut off your nose with a fish-knife; go and wash your mouth in the Ganges." The Behari Hindus, when they hear its cawing, say "सीता राम" or "Sita Ram." If a crow passes ordure on the body of a person, it is believed he will fall ill. The person, thus rendered unclean, must purify himself by sprinkling Ganges water on his body and, thereby, avert the evil or illness which would otherwise overtake him. The raven has been an object of superstitious terror from the times of the ancient Romans. In Europe also, during the Middle Ages, the "croaking raven" was regarded as a bird of ill-omen, as will appear from numerous allusions to this superstition in the works of Shakespeare

and other poets of those times, among which may be mentioned the following:—

"The raven himself is hoarse that croaks the fatal entrance of Duncan." Macbeth, Act I, Sc. 5.

"The croaking raven doth bellow for revenge." Hamlet, Act III, Sc. 2.

In Bengal, it is believed that the quarrelling of crows prognosticates a quarrel. Sprinkling water on the spot, where the crows have quarrelled, is believed to remedy the apprehended evil. It is, further, believed that crows cawing, and then flying up, and again sitting, presage the arrival of guests in the house. This is similar to the item of folk-lore from the Gorakhpur District, given by Pandit Ramgharib Choube in his notes on the folk-lore about crows. The Parsees also draw similar omens from the crow.* A peculiar sort of noise, which is made by crows, and which the Parsees call "bharyo-avaj" or "full noise," presages to the Parsees the arrival of a guest or the receipt of a letter from an absent relative. If this peculiar noise made by crows is followed by a good event, the master or mistress of the house presents some sweets to the crow. Another peculiar kind of cawing of the "Kâgai" or female crow prognosticates evil. Whenever a crow makes a noise of the latter description, it is driven away with the remark "Go away, bring some good news." The Hindus of the Bombay Presidency also share the same belief with the Parsees. Whenever the Hindus of those parts hear a crow making the peculiar sort of noise, which indicates the arrival of a dear relation, or, at least, of a letter from him, they promise him golden rings on the feet, a ball prepared of curd and rice, a piece of silken cloth and pickles to eat. If the omen drawn from its cawing turns out to be true, they give sweets to the crows to eat. It is also believed that when the promised sweets are given to the crows on the roof of a house or on an open place, the birds assemble, but do not eat the sweets until the particular crow, to whom the sweets had been promised, arrives there and begins to eat the same.† In Behar also, omens are drawn from the cawings of the crow, as will appear from the following text in Sanskrit, and its commentary in Hindi:—

TEXT IN SANSKRIT.

काक शब्द शकुन ।

काकस्य वचनं श्रुत्वा पादछायां तु कारयेत् ।
त्रयोदशयुतां कृत्वा षड्भिर्वैमागमाहरेत् ॥ ८८ ॥ फल ॥

* *Vide* the *Journal of the Anthropological Society of Bombay*, Vol. I, p. 292-3.

† *Vide* the *Journal of the Anthropological Society of Bombay*, Vol. II, p. 167.

लाभः खेदस्तथा सौख्यं भोजनं च धनागमः ।
अशुभश्च क्रमेणैव गर्गस्य वचनं तथा ॥ ८६ ॥

COMMENTARY IN HINDI.

यात्राकाल में काक शब्द सुनके अपनी पादछाया जो होय उसमे १३ मिलावना ६ से भाग लेना जो शेष रहे उसका फल १ शेष रहे तो लाभ २ शेष रहे तो खेद ३ शेष रहे तो सुख ४ शेष रहे तो भोजनप्राप्ति ५ शेष रहे तो धनप्राप्ति शून्य शेष रहे तो अशुभ यह क्रम से देखना यह गर्ग मुनिने कथित किया है ।

TRANSLATION.

If, at the time of departure, the cawing of a crow be heard, the person departing should measure his shadow with his foot and increasing it (the number of feet) by 13, divide the total by six. The remainder 1 foretels profit; 2 sorrow; 3 happiness; 4 gain of food; 5 gain of wealth; and zero bad luck. This is according to the saying of Garga Muni.

In folk-tales, the crow is represented as the pattern of a cunning bird, always teaching its associates and young ones the arts of dissimulation and trickery.* In a Kashmiri folk-tale, a crow steals a potter's infant daughter and brings her up, who is ultimately married to a Raja.†

2. *The Owl:*—Much folk-lore has also gathered about the owl. It is also looked upon as a bird of ill-omen in many countries. Its weird screeching is supposed to presage death. If an owl hoots in the day-time, its hooting forebodes evil. Many Indian races of people believe that this bird is always associated with death, as will appear from the fact that the names given to this bird among several Indian races signify "bad bird" or "death-bird." Just as, in the district of Gorakhpur, the name of "*Muākawā chiryā*" or "slaughtering-bird" is applied to it. The idea of its being associated with death is also current in Arabia from a very remote antiquity. The ancient Arabs entertained the superstitious belief that an owl issued from the skull of a dead man, as is evidenced by the testimony of several European travellers in Arabia, who state that figures of owls are carved upon the entrances to the mortuary caverns of the ancient Arabs. The belief in its being associated with death was also current in England in the sixteenth and seventeenth centuries A.D., as will appear from numerous references

* Swynnerton's *Rājā Rasālu*, pp. 190–193.

† Knowles's *Folk-tales of Kashmir*, pp. 29–31.

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to it in the literature of those times, especially in the works of Shakespeare who, to quote a few examples, says:—

> "It was the owl that shrieked; the fatal bell-man
> Which gives the stern'st good-night."— Macbeth II, 2.
> "The owl shrieked at thy birth, an evil sign;
> The night-crow cried, abiding luckless time."—Henry VI.

Among the Parsees, the sight of an owl is a very bad omen.

In Bengal, the barn-owl (*Strix flammea*, Linn.) is called *Lakshmī peṁchā*, and is sacred to *Lakshmī*, the Hindu goddess of wealth. This bird is always to be found depicted, along with conch-shells and sheaves of rice-plant, in native drawings of the goddess Lakshmī. As it is the companion of the goddess of wealth, it is considered a good omen if a *Lakshmī peṁchā* or barn-owl nests in a house, as its advent is supposed to bring wealth to the dwellers of the house and to otherwise confer good luck on them. But the *Kāl peṁchā* (*Ninox scutulata*, Raffles), is much dreaded on account of its evil repute as a visitor from the infernal regions. An ignorant Bengali woman always looks upon it as the living representative of a ghost, and whenever she hears its peculiar cry of *whōō-wuk*, she cries out "Rām, Rām" to exorcise it away.

In Behar, the owl is called *Ulluā* and is considered a bird of ill-omen. It is believed by the Beharī Hindus that, if this bird screeches near a locality for one week, some sort of calamity will overtake that locality soon. In Chupra and other parts of Behar, a night-bird, which is called the *Bhākur*, and which, from the description thereof given by the people of those parts, appears to be the *Ninox scutulata* (*Kāl peṁchā* of Bengal), is also looked upon with much superstitious terror. The cry of this bird is usually to be heard during the stilly hours of the night, and the low-class people of Chupra and other parts say that its weird cries portend some calamity to the place it frequents. I have made enquiries here (Hathwa), but find that this bird called *Bhākur* is unknown here. In Behar, omens are drawn from the different kinds of noises made by a kind of owl called Pingalā, as will appear from the following text in Sanskrit, and its commentary in Hindi:—

TEXT IN SANSKRIT.

पिङ्गला शब्द शकुन ।

उल्हासः किल्विले चैव चिल्पिल्या भोजनं तथा ।
बन्धनं खिटिखिट्टिस्यात्कुर्कुशब्दैर्महद्भयं ॥

COMMENTARY IN HINDI.

फल। यात्राकाल मे पिङ्गला का किलबिल शब्द होय तो आनन्द चिलपिल शब्द होय तो भोजनप्राप्ति और खिटखिट शब्द होय तो बन्धन कुरकुर शब्द होय तो महाभय इस प्रकार से पिङ्गल के शब्दका विचार करना॥

TRANSLATION.

If, at the time of departure, the *kilbil* sound of the Pingalâ bird (a kind of owl) be heard, it foretels pleasure; if its *chilpil* sound be heard, it foretels gain of food; if its *khitkhit* sound be heard, it augurs imprisonment; and if its *kurkur* sound be heard, it prognosticates great fear.

In Indian folk-lore, the owl plays an important part. It is generally credited with the powers of seeing into the future and foretelling future events. In a Kashmiri folk-tale, the owl is one of the ministers of the King of Birds, to whom the latter always turns for advice on occasions of difficulty.*

3. *The Vulture* :—The vulture is also looked upon by all Hindus, whether of Bengal or Behar, as a bird of ill-omen. If it sits on a house, it forebodes the destruction of the entire family. If a vulture flies over the head of a person, it prognosticates death to that person. It is said that the present Maharājā Bahadur of Darbhāngā demolished a newly-built palace because of a vulture which had perched upon it.

4. *The Dove* :—In Bengal, the dove, called *Ghughu* in Bengali, is also regarded as a bird of ill-omen. It is believed there that, if a dove frequents a house, that house will soon fall into ruin, and destruction will soon overtake the members thereof. Traces of this belief survive in several popular Bengali sayings. When a person is cursed with an imprecation to the effect that ruin may soon overtake him, it is said that a dove may soon make his house its feeding-ground (नार भिटेते घुघु चरक). An evil companion, who is likely to lead his associate of good character to ruin and evil courses, is spoken of as a बाखु घुघु or an old dove.

5. *The Nilkaṇṭha* :—The Nilkaṇṭha (नीलकण्ठ) is commonly known to naturalists as the Indian Roller (*Coracias indica*, Linn.). It is also known to Europeans in India as the Blue Jay. The sight of this bird is considered auspicious by the Hindus of Bengal and Behar. It is considered to be sacred to Siva who is said to have assumed its form. Nilkaṇṭha is one of the appellations usually given to Siva on account of his throat having become blue with drinking the poison that had

* Knowles's *Folk-tales of Kashmir*, p. 450.

come out of the ocean at the time of its churning by the gods. Perhaps, it is on account of Siva or Nilkaṇṭha having assumed the form of this bird, that the name Nilkaṇṭha is also given to it. It is said that, during the Dusserah festival in Behar and the Durgā Pujā in Bengal, when the goddess Durgā, the spouse of Siva, is worshipped in Behar and Bengal, the god Siva assumes the form of this bird and visits the earth to fetch away his spouse on the last day of the Dusserah and Durgā Pujā festival, to his abode in the celestial regions. It is popularly believed in Bengal that, after the month of Āswin in which the Durgā Pujā festival comes off, this bird is nowhere to be seen. Its sight, during the Dusserah festival in Behar and the Durgā Pujā festival in Bengal, is considered very auspicious. On the last day of the Dusserah festival in this place (Hathwa), a pair of this bird are set free annually by the Mahārājā Bāhādur of Hathwa, as the sight of this bird on that day is considered very auspicious. On the Dusserah day in 1894, I joined the Dusserah procession in which the late Mahārājā Bāhādur took a prominent part, and found that, when the procession arrived at a certain place in its route, a pair of the Nilkaṇṭha, which were in a cage, were set free. This bird is similarly set free in Calcutta on the Bijayā Dasamī day of the Durgā Pujā by persons accompanying the image of the goddess Durgā to the river, where it is immersed and thrown into the waters. In Nagpur, this bird is said to be liberated by the Rājā of that place on the occasion of the Dusserah. It is also liberated during other Hindu ceremonies in various other parts of India. Poor people, who cannot afford to purchase these birds from fowlers, seek out this bird in thickets and groves on the Dusserah day, and obtain merit by catching glimpses of it. The Banias are also said to look out for this bird on the Bijayā Dasamī day before the throwing of the image of the goddess Durgā into the river, and pay their devoirs to this bird.

The sight of this bird is considered so auspicious that, whenever people in Bengal catch sight of this bird, they repeat the following rhyme :—

नीलकण्ठ गदाधर ।
तोमार पाये एकश गड़ ॥
तुमि रइले डाले ।
आमि रइलुम खाले ॥
देखा हय येन मरणकाले ॥

Translation.

O Nilkaṇṭha, thou art the impersonation of Viṣṇu, I bow my head to thy feet one hundred times. Thou art on the branch (of a tree); while I am on the ground. I wish that I may see thee at the time of my death.

The bird, being the incarnation of Viṣṇu, is considered so auspicious that, if a dying person catches sight of it at the time of his death, his looking upon it is tantamount to the same thing as if he had caught sight of the god Viṣṇu himself at the time of his death.

6. *The Pigeon* :—The pigeon is considered a bird of good omen in Bengal. Its flesh is not eaten by the orthodox Hindus of Bengal, nor is its flesh cooked in the family kitchen. In Bengal, the arrival of a stray pigeon in the house is looked upon as the arrival of Lakshmī, the goddess of wealth. But in Behar, the pigeon is considered a very clean bird, and its flesh is eaten by all orthodox Behari Hindus, except those who have given up fish and flesh.

7. *The Khanjan* :—This bird is known to Europeans under the name of the Large Pied Wagtail. Its scientific name is *Motacilla maderaspatensis*, Gmel. This bird is frequently mentioned in Sanskrit and Bengali poetry on account of the beauty of its eyes, and its pretty dancing gait which is due to its habit of vibrating the tail repeatedly. The Hindu poets frequently draw similes from it when speaking of a beautiful damsel's eyes and gait as being खञ्जनगञ्जिनी, that is to say, as putting to shame the bird Khanjan with the beauty of her eyes and gait. The epithets खञ्जनगञ्जनाक्षि and नेत्रेखञ्जनगञ्जने are frequently used in Sanskrit poetry with respect to the eyes of a lovely lady.

Omens are drawn from the first sight of the Khanjan. It is stated in the 45th Chapter of Varāha Mihira's Bṛhat Saṃhitā that it is auspicious to look on a Khanjan with a thick, long and black throat. The sight of a Khanjan with its head and throat wholly black augurs the fulfilment of one's desires. The sight of one having on its throat black spots interspersed with a few white spots, forbodes disappointment. The sight of a yellow-coloured Khanjan prognosticates trouble and suffering. The sight of a Khanjan perched on a tree laden with sweet and fragrant fruits, in a sacred tank, on the head of an elephant or horse, or on the hood of a snake, on a hall, in a grove, on an edifice, in the pasturing ground of kine, in a room where sacrifices are performed, on an elephant's stall or on a horse's stable, near a king or Brāhman, on an umbrella, banner, or fly-flapper of yak's tail, a pot of curds, or a stack of paddy, or in a tank full of lotuses, augurs prosperity. A person seeing a Khanjan wallowing in mud will get sweetmeats; seeing it

perched on green turf will gain that person new clothes; and seeing it perched on a carriage forebodes destruction to the country. If it is seen perched on the thatching of a mud hut, or on the roof of a brick-built house, its sight augurs loss of wealth to the seer; the sight of it sitting in a hole prognosticates captivity. If a person sees it in an unclean place, he will fall ill. But if he sees it on the back of a sheep, he will soon meet with a beloved person. But if he sees it on the back of a buffalo, camel, ass, or on a bone, or in a cremation-ground, on the corner of a house, or on a mountain, wall, or on a heap of ashes or clippings of hair, evil or death will soon overtake him. If this bird is seen while it is flapping its wings, the sight of it is inauspicious; but if it is seen while drinking water from a river, its sight is auspicious. The sight of this bird at sunrise is auspicious, but at sunset its sight is inauspicious. At the time of starting on an expedition, a king should go in the direction in which he may see a Khanjan flying. If he goes in this direction, he is sure to vanquish his enemy. One is sure to find some hidden wealth in a place, where he sees a male and female Khanjan pairing with each other. Glass is found underneath the ground on which a Khanjan may vomit; and charcoal is found under the ground whereon a Khanjan voids its excrement. The sight of a dead, maimed, or diseased Khanjan prognosticates to the seer, death, loss of a limb, or disease. If a king, seeing an auspicious Khanjan in an auspicious place, places offerings of sweet-smelling flowers and incense on the ground, his prosperity will increase. Abstinence from meat for seven days after seeing an inauspicious Khanjan, averts the evil likely to arise from seeing it. The effect of seeing a Khanjan for the first time during a year may happen at any time during that year; but if it is seen again during that year, the effect will happen only on the day on which it is seen for the second time.

VIII.—*The Lepcha or Rong Language as illustrated in its Songs.*—*By* L. A. Waddell, LL.D.

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In a former article[1] recording the etymology of the Lepcha names of Places, Mountains and Rivers in Sikhim, I referred to the exceptional difficulties of such a task, owing to the fact that the language of the Lepchas or Rong, the aborigines of Sikhim, was fast dying out, and that no Vocabulary had been published. This last reproach is to some extent being removed by Professor A. Grünwedel of Berlin, who compiled in 1892[2] a small Vocabulary from the *Grammar* of the late Col. Mainwaring and some missionary tracts, and he now is engaged in editing the Colonel's manuscript *Lepcha-English Dictionary*; and it is at his request that I have collected some Lepcha Songs, a subject on which nothing has been written.

This forthcoming Dictionary, however, while it will be welcome in that it will fix, at least approximately, many hitherto unrecorded words in the language of this peculiarly interesting primitive people, it nevertheless will require very careful editing. For I found on inspecting the manuscript, which was sent to me by Government for report, that it was stuffed so full of Tibetan words, that these latter occupied about two-thirds of the entire manuscript, and many of the words which Col. Mainwaring believed to be pure Lepcha, were not Lepcha at all, but Tibetan, which is structurally and ethnologically very different; and their inclusion in this way tends to mislead those who are searching for the affinities of the Lepcha speech. Moreover, too great prominence has been given in it, I think, to the so-called Lepcha characters, and to Col. Mainwaring's theories and mode of spelling many of the names.

The Lepcha can scarcely be said to be a written language. Its so-called characters, I found in 1891, were invented only at the beginning of last century by a Lama of Sikhim with a view to convert the Lepchas to Lamaism.[3] He designed them from the Tibetan and Nepalese forms of the Indian alphabet. But these characters do not well represent the Lepcha sounds, and especially so in their romanized equivalents as given by Col. Mainwaring in his *Grammar*. This was

1 "Place and River names in the Darjiling District and Sikhim." *Journal, A. S. B.* vol. lx, pp. 53–79, 1891.

2 In the *T'oung Pao*.

3 This fact was recorded by me in 1892 in my section of the *Gazetteer of Sikhim*, where it got transferred to page 13 under the chapter relating to this Lama, the priest-king P'ag-dor Nam-Gyal, born 1686, died 1717 A.D.

particularly noticeable when I took down the spoken words directly from the lips of the identical men who had been Col. Mainwaring's chief informants. Their pronunciation of many of the words differed considerably from his record, especially in the vowel sounds. Col. Mainwaring himself partially admitted to me this difference, when I confronted him with these men; but he excused himself by alleging that none of the Lepchas knew their own language properly! and, he added, that when he kept a school for Lepchas at Darjeeling, he never could get them to pronounce their own words correctly! Indeed it was evident that the enthusiastic Col. Mainwaring in addition to arbitrarily altering the Lepcha language and subordinating the actual facts to his theories on the subject, did not distinguish many of the vowel sounds.

To express, however, by any system of transliteration the rich vowel sounds of the Lepcha speech is extremely difficult. Most of the vowels are clearly diphthongs and triphthongs,[4] so much so as to suggest the possibility that they represent contracted forms of longer words from which some of the consonants may have dropped out in the wear and tear of use through the many ages they were unfixed by writing. Little phonetic decay, however, seems to have occurred during the past 180 years or so, judging from the written forms, found in the first Lepcha book, the *Tashi-sung*, which is believed to have been composed about that date.

The tonic character also of the Lepcha speech, has not been recognized. Lepcha abounds in homonyms, having a variety of meanings according to the tone in which the word is uttered. These tones I have not attempted to indicate here, as I have not had time to study the language in sufficient detail for this purpose.

In view, therefore, of the comparatively recent introduction and manifest insufficiencies of the so-called Lepcha alphabet, and the undesirability of introducing needlessly such a mongrel character, I have preferred to give in this paper the spoken forms in romanized type as noted down phonetically by myself according to the system of transliteration, adopted by the Society.[5]

The ancient nature of the Lepcha songs is evident from the fact that they preserve many archaic words and phrases, the meaning of which is now completely forgotten by the Lepchas themselves. These archaic words usually occupy the position of qualifying phrases or nouns-in-opposition, which are prefixed or affixed to a word possessing a well-known meaning so that the archaic words are treated as redundant.

[4] Thus the word for 'a Spirit' which is written *Ram* (not '*Rum*' as given by Col. M.) is usually pronounced *Rəam*.

[5] Except that for *c*, *y*, *th*, I have preferred *ch*, *ñ*, *t'*.

Those which are prefixed are called by the Lepchas *Taṅ-bor* (meaning literally 'inuendo') and are termed 'figurative' by Col. Mainwaring,[6] who also considers the affixes to be 'expletive' and many of them without meaning.[7] I believe that most of them have meanings and that they may prove generally to be descriptive, and, only occasionally, metaphorical. And the homonymic character of the language also would suggest the possibility that some of these archaic words are descriptive, as in the tonic Chinese and Burmese, such as 'the *flat-thing* plate,' 'the *round-thing* bottle,' &c.

Thus, one of the commonest of these archaic expressions, or so-called *Taṅ-bor*, is the prefix to the tribal name, to wit '*Mo-tan-chi* Rong.' If you ask a Lepcha, that is a 'Rong,' what is the meaning of '*Mo-tan-chi*,' he invariably replies that it has no meaning or sense whatever. To me, however, it seems that the first two syllables are clearly the roots for 'mother' and 'flesh' (*Mo*, *tan*); and *chi* although now ordinarily used for 'spirit' in a liquor, may originally have meant animal spirits and hence inspirited or cheerful. Thus the designation of the tribe would mean 'the (one) mother-flesh jolly Lepchas.' If this hypothesis be correct, and it has much in its favour, the prominence herein given to the word 'mother' is interesting, because customs are to be found amongst the Lepchas which appear to be vestiges of matriarchy, which ancient institution still survives amongst their co-related tribes in the Garo Hills.

Again, the archaic terms prefixed to the words for 'world' and 'field' seem to be descriptive. The former term which is prefixed to world, namely *zor*, appears to be a form of *zo* or *so*, which literally means now-a-days 'rain,' which is certainly an attribute of the world of the Lepchas, as Sikhim is one of the rainiest countries on the globe. The word *zo* or *zor* however may probably have also meant 'the rain of the eyes' or 'tears,' and thus was perhaps used by the toiling Lepchas in the pessimistic sense of '*tearful* world.' The phrase prefixed to field, namely *Ku-laṅ-miṅ*, means literally 'bosom-stone-below,' and poetically pictures the fields as clothing the bosom of the stones.

The songs often mention the spirits of the tribe including the deified chiefs and their wives. The principal of these is *Ta-shi Tak-bo Rœam* or 'The Sky-existing Head-Father-Spirit,' this is the literal translation of the vernacular name, and is much preferable to the extravagant paraphrase of its etymology as given by Col. Mainwaring.[8]

[6] *Grammar of the Rong or Lepcha*, p. 130. [7] *id.*, p. 136.

[8] *id.*, p. 11 footnote. The etymology, as I take it, is: *Ta* sky (? related to Chinese *Tien* ?), *shi* to be, *Tak* a contraction for *Tiak* head (? Chinese *Tau*), and *bo* father (? Chinese *fu*) or in Lepcha literally 'the giver.'

This divinity is also called *Tashi-tiṅ* or 'The Sky-existing Lord.'[9] This ancient name of the chief Lepcha Spirit was transferred to a Lamaist Saint by the Lama who wrote the first Lepcha book in order to convert the Lepchas, and to secure their homage and worship for his hero, the founder of Lamaism. He also seems to have altered the name of the god from *Ta-shi* to *Ta-she*, after the Tibetan *she* to know, and called his book by the hybrid Tibetan name of *Ta-she Suṅ* or 'The Scripture of Ta-she (the Sky-seeing One).' This book, the general character of which I indicated some years ago,[10] is crammed with Tibetan words, as the Lepcha is so poor in abstract words that the composer was forced to borrow freely from the Tibetan,[11] as the chapter of this work which has lately been translated by Prof. Grünwedel will show.[12]

In the translations of the following songs, in which I was assisted by Mr. Dorje Tshering, I have reproduced in italics the archaic words of forgotten meaning. The first song, which may be called a song of thanksgiving, is of unequal composition. The third and fourth verses are evidently modern, as they contain several Tibetan words and references to Buddhist symbolism, whilst the first verse has much more regular rhythm than the second, and is therefore, perhaps, presumably, purer and older.

A-CHU-LÉ.

A-chu-lé!

Kāl Tak-bo Ram nan yā yit taṅ soā
Liaṅ Ta-she Ram ya nan yit taṅ soā.
Zor sak-dam ku laṅ-miṅ-tām ā-re-kā
Shām-mān-mi zon yit tō-tsat ka
Gyi-po-boṅ po-mik it duk kaṅ soā
Mo-tan-chi Roṅ kap ka yu gam O.

A-chu-lé!

Far-shi-sham Nam-byoṅ kuṅ yit zo,
Loṅ bi loṅ yit mār-ñu-bü uṅ yit so-ō-re.
Ñu yit sok-ō-re tā-liāṅ fo yit ma O
Zo bāk-dyol yit ku dō-ren yit taṅ kuṅ
Ya t'iṅ nan yit tuṅ soa
Tsat san-roṅ yā ño nan yit ma O.

9 *Tiṅ* from *A-tiṅ*, Lord or Supreme. Probably from *tiṅ* to soar aloft. Compare with this the Burmese salutation to superiors: *a-teṅ*.

10 *Gazetteer of Sikhim*, 1894, p. 293; and *Buddhism of Tibet*, 1895, p. 166.

11 As showing the primitive nature of the Lepcha, a characteristic word is 'hunter' (*Mōn-riāk-bo*) which means 'The flesh-meat—pursuing father.'

12 In *T'oung Pao*, 1896. Prof. G. shows that it contains a version of the *Suppāra Jātaka*, cf. also his *Veröffentlichungen* aus dem Königl. Museum IV, 1897, pp. 105, &c.

A-chu-lé !

Māl toń-mo ño yit sho-tiń-mo yak yit tań soa.
Liń zer-mo tim-bre ba-ko-mu li-so ya-nan yit tań soa.
Zhel man-ti lion shok ñin-man-ti ñin s'ok kā,
Zhal-li-mu ā-li go ma zhel nan ka
Zhal-li-mu tiat ma lel na pu-yoń
Karvo kap cham-bu go s'u diń ma O.

A-chu-lé !

Lu-mā-hor ka-bam lik-la mān dyań bam
Fot-ma yan nań ka lik-la man kā zhok
Hyap-la-man dyań tyet ma bon nan yoń shu
Dā-sa-mām tan bo mi tań eń cham-bo
Kup nan mi-t'ik-mo shu yāń lel-te.
A-chu-lé ! Sām-pa dup Ta-shi shok.

Translation.

O Joy !

The *kal* Head-Father-Spirit in the olden time
Made the earth. (He) The Sky-Existing One
Made in this tearful[13] world, the fields to cover the bosom of the stones.
When the *sham-man-mi* men were made
And the *gyi* jointed Bamboos and trees,
At that same time were we
The sons of the (one-)Mother-flesh jolly Rongs.

O Joy !

The *far-shi-sham* mulberry trees were made,
The rice, the vegetables were made,
The running rivers with their *so-o-re* fishes,
The *so-ko-re* sky-birds were made.
The *bag-dyol* worms, and the *ku-do-ren* insects,
And the rainbow were made
(All) by our old first great-grandfather ;[14]
(But our) *tsat-san-doń* troubles were made
By our old first great-grandmother.[15]

[13] Or 'rainy.'

[14] This primordial father is named Fa-duń or 'lord Fa-duń' and is said to have been a former chief of the tribe. Another deified chief who is frequently invoked is Tekoń Tek with his wife Ñe-koń. As the word *Tek* means 'preserved or protected' it is possible that he may have gained for the tribe some signal victory over their enemies.

[15] This primordial mother, who is thus given the character of Eve, is called Nā-zoń and is the wife of the above-named Fa-duń. Possibly the first syllable of

O Joy!
Then the *sho-tiṅ* letters and the *mal-toṅ-ma* books were made,
The *liṅ-zen-no* symbols[16] and the *ba-ko-mo* augury *li-so.*
If by my *zhel-man-ti* feeble attempts and *ñiṅ-man-ti* childish blunders
My *zhal-li-mo*[17] tongue has not been fluent,
I pray you will not cut off my *zhal-li-mo* tongue
(For) I am (only) a *kar-vo* young boy singing this (humbly) standing.

O Joy!
With my *liü-ma-bor* folded hands and *lik-la-ma* folded fingers,
With my not being able to unfold them,
I beg you will not cut my *lik-la-ma* fingers and *hyam-lä-ma* feet;
(For) I am (only) a *da-sa-mam* paltry one, and a *mi-taṅ-eṅ* child
Struggling, *mi-t'ik-mo* I, what can I sing?
O Joy! Let all wishes be fulfilled! Let glory come!

In the foregoing it is curious to notice how the Rongs associate themselves with the Bamboo which supplies so many of their wants. The following is a New-Year's song. The reference in the second verse to *Oṁ* and other Buddhist symbols as well as the evident Tibetan form of the so-called *Taṅ-bor* expressions indicate a modern origin for that verse.

A New Year's Song.

Zor sak-dam laṅ-miṅ tām a-re-kā
Pret-tak-ñom sak-ñi sa-roṅ re
Pat nam-nu lo zum gan nam-nu zum
Ryu ṅaṅ sa sak-ñi oṅ sa so-nāp gam.

Sher ts'o-di om kiṅ-tsum ts'oṅ ṅaṅ sa
Chi kar-mom shop-bi kar-tsām du ṅaṅ sa
Pe-re gi-pa-tsar nam a-pin sa
Tim-bre yim-ba yoṅ lab-dan s'u diṅ ma.

the name is cognate with the Chinese *Nü*, a woman, and the corresponding syllable of her husband's title is the Chinese *Fu* a father.

[16] *Tim-bre* is the Sikhimese Bhotiya corruption of the Tibetan rten-'brel, the Buddhist Nidāna or concatenation of Causes of Existence.

[17] This is evidently corrupt honorific Tibetan for 'tongue.'

Mo-tan-chi Roń kap ńun non-bān
So-lā-non po-boń yit duk kań soa
Ar-tsam po-mik duk kań soa
Pa-shor boń yit duk kań-soa
Roń kap gam yoń shu shu.

Translation.

All the Rongs and their kin have collected this day
On the field-covered stony bosom of this tearful earth.
To-day is the day of happiness,
To-night is the night of strength (renewed for the New-Year).

We have *bi-kar-mom-shok*, *bi-kar-cham* assembled
By the decree of *s'ar* fate and *Ōṁ* symbols,[18]
We sing this humbly standing up
For good luck for the *gi-po-tsāń* coming year.

We are the sons of the (one-) Mother-flesh jolly Rongs,
We were made along with the *so-la-non* Bamboos[19]
And the *ar-tsam* Bamboo-joints, and the small reed Bamboos[20]
We, the sons of the (one-) Mother-flesh jolly Rongs
Are of equal age (with the Bamboos)!

The following are love-laments, the first by a languishing spinster and the others by swains. The reference to the 'dear sisters' or maidens as standing behind relates to the present practice of the girls of the family who stand behind the guests to replenish their Bamboo cups of Murwa beer.

U-LA-DUŃ DŪT.

U-la-duń düt sa'l'ām liōp lāma-t'el nom go
Ñol-blī düt sa-shel liōp lā na-t'el nom gō
Soń-la lieu zhu fań-vuń liōp lā na-t'el nom go.

Kā-fer ki-vun nań nāń liōp lā na-t'el nom go
Sher la tań-kat sa-shel " " "
Mit tań-gum diń-mit nom " " "

[18] *Tim-bre*, the Buddhist *Nidānas*, see footnote 16.

[19] *Pao* or *Pa*, the longest of the Bamboos (*Dendrocalamus Hamiltonii*) whose stem is 6 to 8 inches in diameter.

[20] *Pao-shor*, a small grassy Bamboo, a favourite fodder for cattle.

Shuń fo shot ta-bäl-la liōp lä na-t'el nom go
Tak-mok fo shot nań nāń " " "
Sāk la ma ran na mo " " "
Loń la ma ran na mo " " "

Translation.

I (am) a maiden[21] like an unopened bud,
Like a pretty supple shuttle,[22]
Like a whirling spindle.[23]

I stand a maiden like a twirling spinning thread,
Like a bright golden tassel,
I stand (forlorn) behind.

I (am) a maiden like a tender coiled bud,
Like a sorrowing song bird,
Loudly lamenting like the Tak-mok bird
I feel very sad, very sad!

Another Love Lament.

Fok-tsom-mon na you
Kiń tsom veń na shen
Mi-t'ik-mo shu yāń
Kiń tsom veń na len

Duk-mar-bu som t'at
Tuk-ta-li Nä-zoń ño
Zam-sa-li Fa-duń t'iń
A yu ru ma o

Kyoń-ra-lo lat dok
Ar shi-ban shu yit
Zhem-ta-mi-shu yit
Gi-par-vim shu de.

Translation.

O you with the flowing hair!
O fair one with the neat parted hair!
Why have you *mi-t'ik-mo* charmed me so?
You fair one with the neat parted hair.

[21] Literally, 'sister.' [22] *Ñol-bli*, a weaving rod. [23] *Lien-zhu.*

O old great grandmother *Tuk-ta-li* Nazoń
You *duk-mar-bue* joiner of our breath,
O old great grandfather *zam-sa-li* lord Fadung,
Praise be to your names!

(But) why have you *ar-shi-ban* created me?
Why have you *zhem-to-mi* created me?
Why have you *gi-par-vim* created me,
To suffer such heart-breaking sorrow?

Another.

Eh yeh! Sak-la ma-run-ne loń la ma run ne
Mit tań-gum nom t'om eń par-ño soń ña
Kyoń-ra-lo lat ā-re-re favi-lā yo
Ār-tan tsām byet la kań kyań la yo ma.

Eh yeh! Go-roń ño Sak-la ma-re
Sher ts'o-di tuk-bo ram ho nan ne
Om kiń-tsum shu noń ńań go dan bo che
Sāk-la ma-run-ne loń la ma-run-ne.

Eh yeh! Shi-mān-mi kap gi-par-voń
Ñin kap sa-lo noń ki-dak tsam-la-non san-roń
Shu mat noń ńań go yoń shu diń ma o
Sāk-la ma-run-ne loń la ma-run-ne.

Translation.

Alas! I feel very sad.
Listen! O maidens behind.
I feel this heart of mine is pierced through
And my *ar-tam-tsam* breath[21] is chill.

Alas! I feel very sad!
O Head-Father-Spirit, creator of *Sher* fate
Tell me what is my *Om* destiny?
I feel very sad!

Alas! I am (only) a *Shi-man-mi* youth,
A *gi-par-vim* boy. Why therefore, I implore you,
Have you given me this *so-lo-non* sorrow
And *tsam-la-non* sorrow? I feel very sad!

[21] Literally, (lungs)

THE PANGS OF LOVE.

Chin-chi-ńe tak-zok buk go ma-t'ān na yaṅ
Kyoṅ-ra-lo lat dok a tim-bu lāt non ne
Fŏa-rŏa-liṅ kar-gok gō ma zon na yaṅ
Ár-tsan tsam bit dok tim-bu lāt non ne
Chan-sa-li ko-sok go ma-tān na-yaṅ
Mar-ño bau uṅ ńot tim-bu lāt non-n'e.

Translation.

Though I tasted not the wild *chin-chi-ne* yam,[25]
I feel great pain in my *kyoṅ-ra-lo* heart!
Though I ate not the stony *fa-ra-liṅ* wild plantain,[26]
I feel great pain in my *ar-tsan-tsam* chest!
Though I took not the wild *chaṅ-sa-li* yam,[27]
I am burned up with a fiery thirst!

The following seems a metaphorical declaration of affection by a youth of the valley of the Singbali river, near Kurseong, towards a girl of the Kirongpata glen.

Siṅ-ba-li uṅ-koṅ[28] yel-bo re to go shen,
Mit taṅ-gum na-lēm
Ki-ruṅ-pa-ta uṅ-koṅ yel-bo-re to go shen
Gi-yoṅ-tsok fa-leṅ nam go mi yaṅ.

Translation.

O! who changed the course of the Singbali river?
It was the fairy of true understanding, the sister behind!
O! who changed the course of the Kirungpati river?
It was a powerful being-like me,
This *gi-yoṅ-tsok* young brother!

The reference to money, which the Lepchas did not know until lately, as well as the occurrence of several Tibetan words in the following shows its modern character.

25 *Tak-zok-buk* or 'Forest Yam,' is very deeply set 4 to 6 feet below the surface of the ground and is dug up only by great labour.

26 *Kar-gok* is the wild plantain (*Musa sp.*). It is full of large sharp jagged irritant seeds. The cultivated plantain (*Kar-duṅ*) is seedless.

27 *Ka-sok* is a hairy round kind of field yam which grows near the surface, but its tubers cause thirst. Other kinds of wild yams (*buk*) found in Sikhim are *Sa-um*, *San-gol* and *Sa-li*, which is probably the *Sa-li* of *Taṅ-bor* word in text.

28 *Koṅ* or *kioṅ*, a rivulet, is probably related to the Chinese *kiaṅ*, a river.

Kar-vo kap cham bu gya-lam-bi tyet so nā le
Diṅ-tam pu kom kōt bo yet sa yoṅ shu
Shi-mā-yi p'i-liṅ t'oṅ ṅaṅ sa gli-la yo
Sāk-la ma-run-ne loṅ la ma-run-ne.

Translation.

Oh! come with me a little *kar-vo* boy to the cross-roads
And I will give thee a *diṅ-tam pü*[29] silver coin
Though I have taken refreshing *shiṅ-ma-i* foreign snuff,
My heart is swelled with grief.

[29] This *Taṅ-bor* phrase may be a corruption of the Tibetan *rin-taṅ-pahi*, 'precious,' or, the *tam* may be intended for the Indian *taṅ-kā*, a rupee, or the descriptive Lepcha *tam*, a flat thing, which may be possibly cognate with the Tibetan *t'aṅ*, a field.

IX.—*On Coincidences between some Bengali Nursery Stories and South Indian Folk-tales.*—*By* Çarat Candra Mitra, M.A., B.L., *Corresponding Member of the Anthropological Society of Bombay. Communicated by the Anthropological Secretary.*

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It is one of the characteristics of the savage mind that it ascribes to beasts the same attributes as it itself possesses, namely, the same power of speech as the savages themselves possess, and a nature resembling their own. In fact, to the savage mind there is no clear line of demarcation between human beings and the brute creation. The savage represents the irrational beasts as acting and thinking in the same way as he himself does. It is for this reason that Beast Tales and Apologues, in which the lower animals are represented as indulging in action and thought like human beings, first originated among the savages. Just as the savages advance onwards in the scale of civilization and, with their progress in culture, their moral sense is awakened, the savages become conscious of the broad line of demarcation—the wide gulf—which separates them off from the brute-creation. When they attain to this stage of thought, they come to estimate the Beast Tales and Apologues at their true worth and, as the result thereof, come to recognise them as "fictions with a purpose." Subsequently, these Beast Tales and Apologues become vehicles for conveying moral and political truths, or for satire. In the one case, they develop into the Didactic Apologues and Parables of religious teachers and moralists, or of statesmen. In the other case, they are used either as instruments of social warfare, or as weapons for waging political or literary feuds. This development of the Beast Tales into the Didactic Apologues and Fables is due to the growth of a conscious literary art in the savage mind enlightened by progressive culture.

Stories are extant all the world over, in which animals play human parts, and which have for their theme the triumph of cunning over physical strength. Among the Bushmen of South Africa, the hare displays much the same cunning, as the rabbit among the American negroes, the fox or the Reynard in European folk-lore, and the jackal and the monkey in Indian folk-tales. In Japanese legends, the Racoon-faced Dog (Tanuki) is credited with as great powers of transformation and mischief as the fox. Among the Chinese also, the fox is regarded as a wicked animal capable of everything in the way of transformation and suggestion. In a Japanese painting by Hoku-Sai, now in the British Museum, the racoon-faced dog is represented dressed as a priest, and examining a trap baited with a dead rat. Similarly,

the fairy-fox plays an important part in Chinese folk-tales, often assuming the guise of a woman—like the charming young fox of numerous Japanese tales, which, disguised as a woman, gets married to some loving Japanese youth and has a family by him. It is one of the standing incidents of these Chinese and Japanese folk-tales that, on account of a little domestic brawl, the fox-maiden throws off the guise of womanhood and, re-assuming her vulpine form, runs away followed by her litter of cubs, leaving the disconsolate husband alone. As an illustration of the cunning ascribed to the jackal* and the monkey,† I shall narrate the following Bengali nursery story, which is familiar to every Bengali child, but which is, I believe, now published for the first time :—

"Once upon a time, there lived in the forest a jackal who went of a night to eat brinjals in a field cultivated with that luscious vegetable. While eating the fruits of the brinjal plants, a thorn of the brinjal entered into the jackal's nose, which pained him much. He tried his best to extract the obnoxious thorn, but to no purpose. At last, goaded to desperation by the pain, he went to a barber who lived in the neighbourhood. Knocking at his door, he called out to the barber: "Brother, brother, are you at home?" Disturbed at this noise, the barber awoke from sleep and enquired: "Who are you calling me at this time of the night?" The jackal replied: "I am a jackal. I had gone to eat brinjals in a brinjal-field and, in consequence thereof, a thorn has entered into my nose. Do be good enough to extract the thorn and relieve me of the pain." The barber replied: "I am at your service. But if in extracting the thorn, your nose gets cut off, I shan't be responsible for the loss of your olfactory organ." The jackal replied: "You needn't at all be afraid of that. Pray be quick and get out the thorn from my nose." Taking the jackal at his word, the barber took out from his shaving-case a *narun*‡ and began extracting the thorn. While trying to get out the obnoxious thorn, the barber happened to chop off the tip of the jackal's nose. Thereupon the jackal cried out: "Dear me, you have cut off the tip of my nose. That's very bad of

* For instances of the jackal's cunning as illustrated in Indian folk-tales, see Day's *Folk-tales of Bengal*, p. 226; and for its Kashmiri variant, Knowles' *Folk-tales of Kashmir*, p. 186; Campbell's *Santal Folk-tales*, p. 41, p. 46, p. 50; Swynnerton's *Raja Rasalu*, p. 185, 186, 187, 190; Anderson's *Kachari Folk-tales* (published as Appendix III to *Journal of the Buddhist Text Society of India*, Vol. IV (1896), part I, p. 24.

† For examples of the monkey's cunning, see Anderson's *Kachari Folk-tales*, p. 26–28.

‡ The *narun* is a thin, long but flat piece of steel sharpened at both the ends, which is used by barbers for paring finger-nails with.

you. You should either give me back my nose, or give me in lieu thereof, your *naruṇ*." The barber was very much surprised at the jackal's demand and said: "Well, I told you at the very outset that I won't be responsible if your nose got cut off. It's really very queer of you to demand of me, in spite of my warning, the restoration of your nose." To this the jackal rejoined:

Nākur badale naruṇ dāo naile keḍe nobo.
In lieu of my nose, give me your naruṇ, or else I shall snatch it from you.

Being very anxious to get out of this scrape, but seeing no other way out of it, the barber made over the *naruṇ* to the jackal and dismissed him. Elated at the bargain he had made, though at the loss of his nose, the jackal trudged on along the village-road, triumphantly exclaiming all the while:

Nākur badale naruṇ pelum ḍyāṅg ḍyāṅgā ḍyāṅg ḍyāṅg.
*In lieu of a nose, I have got a naruṇ, ḍyāṅg ḍyāṅgā ḍyāṅg ḍyāṅg.**

While going on thus bawling out, the jackal came across a potter who was digging up clay with his fingers. Going up to him, the jackal said: "Brother, brother, why are you digging up clay with your fingers? It must be giving you a lot of trouble. Why don't you use a spade or any other instrument?" The potter replied: "There's no help for it. Where am I to get a spade or any other instrument to dig up clay with?" The jackal said: "Well, here I have got a *naruṇ* with me. You are welcome to use it." The potter replied: "No, I won't take your *naruṇ*. If it gets broken, where am I to get a new *naruṇ* to replace the broken one?" The jackal replied: "Never mind. If it gets broken, that will be *my* look-out." Thus assured, the potter took the *naruṇ* from the jackal and began to dig up clay with it. Ere long, it got broken. Seeing it, the jackal said: "Brother, you have broken my *naruṇ*. Give me back my *naruṇ*, or else give me one of your *hāṁḍīs* or earthen vessels." The potter replied: "Well, you told me that you won't mind if your *naruṇ* got broken. Now that it has got broken, you are asking for it of me. You must be a precious rare chap, I see, to back out of your promise thus." The jackal replied:

Naruṇer badale hāṁḍī dāo naile keḍe nobo.
Give me an earthen vessel in lieu of the naruṇ, or else I shall forcibly take it from you.

Seeing no other way out of the difficulty, the potter gave one of his earthen vessels to the jackal and sent him away.

* The words "*ḍyāṅg ḍyāṅgā ḍyāṅg ḍyāṅg*" are meaningless words expressive of exultation at the success of a ruse.

Exulting at the success of his stratagem, the jackal went on along the village-road, triumphantly exclaiming all the while :—

Nākur badale naruṇ pelum ḍyāṅg ḍyāṅgā ḍyāṅg ḍyāṅg.
Naruṇer badale hāṁḍī pelum ḍyāṅg etc., etc.
In lieu of a nose, I got a naruṇ, etc., etc.
In lieu of a naruṇ, I have got an earthen vessel, etc., etc.

While going on thus blazoning forth the success of his trickery, the jackal came across a florist who was watering his flowering-plants with water scooped out with the palm of his hands. Going up to him, the jackal said : "Brother, brother, why are you watering your plants with water scooped out with your hands? It must be giving you no end of trouble. Why don't you get some sort of vessel for baling out water with?" The florist replied : "There's no help for it. Where am I to get money to buy a vessel with?" The jackal said : "Look here, I have got an earthen vessel with me. You are welcome to use it, if you like, for watering your plants with." The florist replied : "I think I shouldn't use your vessel; for if it gets broken, where shall I get money to buy you a new vessel to replace the broken one?" The jackal said : "You needn't be afraid of that. If it gets broken, it will be my look-out to bear with its loss." Being thus assured by the jackal, the florist took the earthen vessel on loan from him and, baling out water with it, began to water his plants. Being made of clay, it soon got broken. Thereupon the jackal said : "Brother, brother, return me my earthen vessel." Thereupon the florist was much put out and said : "O dear me! You must be a queer sort of fellow. You just now told me that you won't ask for the return of your vessel, should it get broken. Now that it's broken, you are asking me to return it to you. How can I return it to you now that it is broken?" The jackal replied :

Hāṁḍīr badale topar dāo naile keḍe nobo.
In lieu of the earthen vessel, give me a topar, or else I shall forcibly take it from you.*

Seeing no other way out of this difficulty, the florist very readily gave one of his *topars* to the jackal and bade him adieu. The jackal proceeded on his journey, crying out at the top of his voice :

* *Topar* is the conical-shaped hat made of *solā* or pith worn by Bengali bridegrooms during the performance of the marriage-ceremony. It is silvered with silver tinsel and ornamented with silvered tassels and flowers made of pith. The florists in Bengal not only deal in flowers, but also manufacture and sell *topar* for the bridegroom, and the *simthi mayūr* or the head-gear (also made of pith) for the bride.

Nākur badale naruṇ pelum ḍyāṅg ḍyāṅgā ḍyāṅg ḍyāṅg.
Naruṇer badale hāmḍī pelum, etc., etc.
Hāmḍīr badale topar pelum, etc., etc.
In lieu of a nose, I got a naruṇ, etc., etc.
In lieu of a naruṇ, I got an earthen vessel, etc., etc.
In lieu of an earthen vessel, I have got a topar, etc., etc.

While going on thus exultingly bawling out, the jackal came across a marriage-party headed by a bridegroom going to the bride's house. The bridegroom had on his head a *dhuchunī*• instead of a *topar* which it is customary for bridegrooms to wear for head-gear on such occasions. Seeing his strange head-gear, the jackal went up to the bridegroom and enquired of him: "Brother, brother, why have you put on a *dhuchunī* instead of a *topar*?" The bridegroom replied: "I couldn't afford to buy myself a *topar*, and have, therefore, donned on my head a *dhuchunī*."

"Look here," said the jackal, "I have got with me a *topar*. You are welcome to use it."

"I don't like to use your *topar*," replied the bridegroom. "If it gets broken, where am I to get money to buy you a new one?"

"You needn't be afraid of that," said the jackal. "If it gets broken, it will be my look-out to put up with its loss."

Thus assured, the bridegroom put away the *dhuchunī* and, donning on his head the *topar* lent him by the jackal, wended his way to the bride's house. But the *topar* somehow or other got smashed during the performance of the marriage-ceremony; and the bridegroom had to do away with it, and to content himself with a *dhuchunī*. The next day, as the bridegroom with a *dhuchunī* on his head was returning home with his bride, the jackal met him on the way and asked for the return of his *topar*.

"I am sorry that the *topar* got smashed to pieces accidentally," said the bridegroom. "You told me that you won't mind if it got broken. How can I, therefore, return it to you?"

The jackal said:

Toparer badale kane dāo naile keḍe nobo.
In lieu of the topar, give me your bride, or else I shall forcibly take her away.

Being thus unable to return the *topar*, the bridegroom was obliged to make good its loss by giving away his bride to the jackal. Taking the bride with him, the jackal went on along the village-road, exultingly bawling out all the while:

• *Dhuchunī* is a basket made of bamboo wickerwork in the shape of a chimney-pot hat. It is used in Bengal for washing raw rice, greens and cut vegetables in.

Nākur badale naruṇ pelum ḍyāṅg ḍyāṅgā ḍyāṅg ḍyāṅg.
Naruṇer badale hāṁḍī pelum, etc., etc.
Hāṁḍīr badale topar pelum, etc., etc.
Toparer badale kane pelum, etc., etc.
In lieu of a nose, I got a naruṇ, etc., etc.
In lieu of a naruṇ, I got an earthen vessel, etc., etc.
In lieu of an earthen vessel, I got a topar, etc., etc.
In lieu of a topar, I have got a bride, etc., etc.

While thus going on with the bride, the jackal chanced to meet a tanner who was currying his leather and, at the same time, cooking his meals. Stepping forward, the jackal asked the tanner: "Brother, brother, why are you cooking your meals yourself? Haven't you got a wife to attend to your household duties?"

"I am a poor man," replied the tanner. "I can't afford to marry and bring up a family."

"Look here, I have got a girl with me," said the jackal. "You can take her to wife. She will look after your cooking and do all your household work. You will thereby be saved a lot of trouble."

"No, I won't take her to wife," replied the tanner. "If, in cooking my meals, she gets burnt and dies, how will it be possible for me to return her alive to you?"

"Never mind," said the jackal, "you needn't bother your head about that. It will be my look-out to bear up with her loss, should she happen to get burnt and die."

Thus assured, the tanner persuaded the girl to live with him as his wife. One day, while cooking her meals, the girl accidentally burnt herself in the kitchen-fire, and died of the injuries thus received.

Hearing of this, the jackal came and demanded of the tanner the restitution of the girl he had made over to the latter.

"Dear me," said the tanner, "you must be a precious rare fellow to ask for the restitution of a dead girl. You told me that you won't mind her loss, should she happen to get burnt and die. Pray tell me how it is possible for me to return her to you, now that she is dead."

The jackal replied:

Kaner badale dholak dāo naile keḍe nobo.
In lieu of the bride, give me a dholak or kettle-drum, or else I shall forcibly snatch it from you.

The tanner very gladly gave the jackal a kettle-drum in lieu of the dead girl, and thanked his stars for having so easily been able to get out of a serious difficulty.

Taking the kettle-drum with him and tom-tomming on it

vigorously, the jackal went up a palm-tree and exultingly bawled out at the top of his voice :

Nākur badale naruṇ pelum ḍyāṅg ḍyāṅgā ḍyāṅg ḍyāṅg.
Naruṇer badale hāṁḍī pelum, etc., etc.
Hāṁḍīr badale topar pelum, etc., etc.
Toparer badale kane pelum, etc., etc.
Kaner badale dholak pelum, etc., etc.
In lieu of a nose, I got a naruṇ, etc., etc
In lieu of a naruṇ, I got an earthen vessel, etc., etc.
In lieu of an earthen vessel, I got a topar, etc., etc.
In lieu of a topar, I got a bride, etc., etc.
In lieu of a bride, I have got a kettle-drum, etc., etc.

And, as he was about to tap his kettle-drum vigorously with the drumstick at the end of his speech, the jackal missed his footing, fell from the palm-tree and died.

There is a variant of this folk-tale which is current in Southern India, and which bears a striking similarity to the Bengali story in almost all its incidents and details. The South Indian variant which is entitled "The Monkey with the Tom-Tom" is as follows :—

In a remote wood there lived a monkey ; and one day while he was eating wood-apples, a sharp thorn from the tree ran into the tip of his tail. He tried his best to get it out but could not. So he proceeded to the nearest village, and, calling the barber, asked him to oblige him by removing the thorn.

"Friend barber," said the monkey, "a thorn has run into my tail. Kindly remove it, and I will reward you."

The barber took up his razor and began to examine the tail ; but, as he was cutting out the thorn, he cut off the tip of the tail. The monkey was greatly enraged and said :—

"Friend barber, give me back my tail. If you cannot do that, give me your razor."

The barber was now in a difficulty ; and, as he could not replace the tip of the tail, he had to give up his razor to the monkey.

The monkey went back to the wood with his razor thus trickishly acquired. On the way he met an old woman, who was cutting fuel from a dried-up tree.

"Grandmother, grandmother," said the monkey, "the tree is very hard. You had better use this sharp razor, and you will cut your fuel easily."

The poor woman was very pleased, and took the razor from the monkey. In cutting the wood, she, of course, blunted the razor ; and the monkey seeing his razor thus spoiled, said :—

"Grandmother, you have spoiled my razor. So you must either give me your fuel, or get me a better razor."

The woman was not able to procure another razor. So she gave the monkey her fuel, and returned to her house bearing no load that day.

The roguish monkey now put the bundle of dry fuel on his head, and proceeded to a village to sell it. There he met an old woman seated by the road side and making puddings. Said the monkey to her:—

"Grandmother, grandmother, you are making puddings, and your fuel is already exhausted. Use mine also and make more cakes."

The old lady thanked him for his kindness and used his fuel for her puddings. The cunning monkey waited till the last stick of his fuel was burnt up; and then he said to the old woman:—

"Grandmother, grandmother, return me my fuel, or give me all your puddings" She was unable to return him the fuel, and so had to give him all her puddings.

The monkey, with the basket of puddings on his head, walked and walked till he met a *Paraiya** coming with a tom-tom towards him.

"Brother *Paraiya*," said the monkey, "I have a basketful of puddings to give you. Will you, in return, present me with your tom-tom?"

The *Paraiya* gladly agreed, as he was then very hungry and had nothing with him to eat.

The monkey now ascended with the tom-tom to the topmost branch of a big tree and there beat his drum most triumphantly, saying in honour of his several tricks:—

"I lost my tail and got a razor; *ḍum ḍum.*"†

"I lost my razor and got a bundle of fuel; *ḍum ḍum.*"

"I lost my fuel and got a basket of puddings; *ḍum ḍum.*"

"I lost my puddings and got a tom-tom; *ḍum ḍum.*"

Thus there are rogues in this innocent world, who live to glory over their wicked tricks." ‡

There is current, in the Pañjâb, a folk-tale entitled the "Rat's Wedding" which is also similar to the Bāngālī nursery-tale mentioned above.§ In this Panjabi variant of the tale, a Rat gave a poor man a bit of stick to use as fuel, and got in return therefor a morsel of

* A low caste man; a Pariah.

† In response to the sound of the tom-tom.

‡ Quoted from the "*Folk-lore of Southern India*," by Mrs. H. Kingscote and Paṇḍit Naṭêsā Sāstrî. London: W. H. Allen & Co., 1890.

§ *Vide* the *Tales of the Panjab.* By F. A. Steel. London: Macmillan & Co., 1894, pp. 13–22.

dough. He gave the morsel of dough to a potter who gave in return therefor a pipkin. Congratulating himself on the success of his bargain, the Rat went away gingerly down the road till he came to where a neatherd was milking a buffalo, and using his shoes for a milk-pail. Enquiring of the neatherd why he was milking his buffalo into his shoes instead of into a pail, and being given to understand, in reply, that he had not got any milk-pail, he exchanged with him the pipkin for the buffalo. While leading the buffalo he came across a bridal party consisting of some palanquin-bearers carrying a bride in a palanquin to her husband's home. The bearers being hungry, put down their burden and began to cook some food. While cooking, they complained of the want of meat to eke out their meal with. Thereupon, the Rat offered them his buffalo, saying that they were welcome to kill and cook it for their meal. The palanquin-bearers, accordingly, killed the buffalo, and, cooking its flesh, ate their dinner with relish. Thereafter the Rat demanded the bride in return for his buffalo—the bride and nothing else. Being alarmed at the Rat's demand, the bearers absconded, leaving the bride in his possession. Thereupon the Rat took his lovely young bride home to his hole. The bride having felt hungry, called for sugar-drops and sweet eggs from her rat-husband. The Rat gave her some green plums to sell in the city and told her to buy sugar-drops and sweet eggs with the sale-proceeds thereof. The young girl accordingly took the plums into the city and hawked them about through the streets, crying out all the while:—

"Green plums I sell! Green plums I sell!
"Princess am I, Rat's bride as well!"

As she passed by the palace, her mother, the Rānī, hearing her voice, recognised her and took her home to the palace. The Rat, alarmed at his bride's long absence, went to the palace door, and demanded the return of his bride, calling out fiercely, "Give me my wife! give my wife! She is mine by fair bargain, I gave a stick and got a loaf; I gave a loaf and I got a pipkin; I gave a pipkin and I got a buffalo; I gave a buffalo and I got a bride. Give me my wife! give me my wife!" The Rānī received her son-in-law of a Rat, and gave him a hot stewpan-lid to sit upon. The Rat accordingly took his seat on the hot stewpan-lid, and was nearly burnt to death. He, thereafter, escaped, howling with pain, leaving behind him all his tail, half his hair, and a large piece of his skin, and vowing that never, never, never again would he make a bargain.

The similarity between the Bāngālī and South Indian variants of the folk-tale given above is very striking. The principal actor in the

Bāngālī version is a jackal, while the hero of the South Indian variant is a monkey, both of which animals are well-known in Indian folk-lore for their cunning and trickery. The incidents in both the tales are nearly the same. In both the cases, the story begins with the running of a thorn into the hero's nose or tail, which mishap is brought about by the hero having eaten some prickly fruit. The hero of the story, subsequently, goes to a barber who discharges the functions of a surgeon in addition to the duties of his own usual avocation, in all primitive communities. The next incident is the loss of the hero's nose or tail brought about by the barber happening to cut off the tip of the former's nose or tail with one of his instruments, while trying to extract the thorn therefrom. In both the cases, the story ends with the gain of a drum from a low-caste fellow who gives it to the hero of the tale in exchange for a more valuable article. The finale of the story is the same in both the versions, namely, the cunning animal getting to the top of a big tree, and proclaiming the success of his trickery, act by act, in almost the same sort of rhyming language. The successive exchanges of articles is effected by the animal in both the variants of the tale, out of the same motives of mischievousness and trickery, the animal waiting to demand the return of his article, till it was broken or used up. In the Bāngālī version, the animal exchanges the barber's cutting instrument for an earthen vessel, the earthen vessel for a bride-groom's hat, and the hat for a bride, and the bride for a kettle-drum; while in the South Indian variant, he exchanges the barber's razor for fuel, and the fuel for puddings, and the puddings for a tom-tom. The similarity is, on the whole, very striking and, at the same time, curious, affording scope for much speculation as to how the same tale could have its currency in such places as Bengal and Southern India which are so widely remote from each other.

Some similarity is also found to exist between another Bāngālī and South Indian folk-tale. The Bāngālī tale is very familiar to Bāngālī children, and is well-known as the story of "The Tiger and the Tree which bore Cowri-shells." It is as follows :—

Once upon a time, there lived in the forest a tiger who had a tree which bore cowri-shells for fruit. The tiger used to leave his house in the morning, and go to the hunting-ground for purposes of stalking animals, and return home in the evening with his prey. During his absence from home, the girls of the neighbourhood used to go to his house and gather the cowri-shells from his tree. One day, a party of village-girls, under the leadership of a Brāhman girl, had gone to gather the shells from the tiger's tree. The Brāhman girl, being bolder than the other girls, got up to the top of the tree to pluck the larger and the

better sort of cowri-shells which were on its topmost branches; while the other girls contented themselves with gathering the inferior kind of shells which had fallen from the tree and lay in heaps at the bottom thereof. While the girls were thus engaged in gathering the shells, the tiger returned home all of a sudden, roaring tremendously all the while. The girls, who were gathering shells at the bottom of the tree, beat a hasty retreat homewards at the approach of the tiger; but the Brāhman girl, who was on the top of the tree, could not get down from it as she was in a terrible fright. Out of sheer terror, she wept all the while. Smelling the presence of a human being on the tree, the tiger came to its bottom. While standing there, a hot tear-drop shed by the girl fell on the tiger's mouth. Licking it up, the tiger perceived that it was the tear of a human being. He, thereupon, enquired who it was that had got on to the top of his cowri-tree. Much terrified, the girl replied that she was a Brāhman girl of the neighbouring village, and that she had got on to his tree for the purpose of plucking the better and larger sort of cowri-shells. Hearing this, the tiger called on her to get down from the tree. The Brāhman girl accordingly descended from the tree. Then addressing the girl, the tiger said: "Well, my bonnie lassie, you shall have to accompany me to my home and become my wedded wife." Much against her inclination, the poor girl had to accompany the tiger to his house where, on arrival, he married her. Thereafter, the tiger and the Brāhman girl lived as husband and wife. In course of time, the Brāhman girl bore her husband a tiger-child. One day, the tiger expressed a wish to his wife that he would be very glad to have some rice-cakes* for his evening meal. The Brāhman girl said that she would be very glad to prepare the cakes for him, only he must supply her with the necessary ingredients, such as rice, pulse, cocoanuts, sesamum, jaggery, mustard-oil, &c. Accordingly, the tiger procured the aforesaid materials and made over the same to his wife with an intimation that he would return home in the evening from the happy hunting-ground and partake of the cakes. Saying this, he left home and wended his way to the hunting-ground. As soon as the tiger was out of sight, the Brāhman girl kindled a blazing fire and, placing over it a cauldron full of oil, set it to boil. Thereafter, she killed the tiger-child and, cutting his carcase to pieces, suspended the same from the ceiling over the cauldron. The drops of blood trickling from the mangled carcase of the tiger-child, fell on the boiling oil and made it hiss and fizz as if something was being fried in it. Thereafter, the Brāhman girl left the tiger's house and fled to her father's place. Returning

* These rice-cakes are called *pishtak* in Bengali.

home in the evening, the tiger found that the doors of his house were shut. But, hearing the hissing and fizzing of the oil within, he thought that his wife must be frying the cakes with the doors shut. So being very happy at the prospect of eating the cakes, the tiger knocked at the door; but, getting no reply, he burst open the doors, and was horrified to find the mangled carcase of his own child roasting over the kitchen-fire. He searched for his wife; but she was to be found nowhere. So he, at once, jumped to the conclusion that his wife must have decamped to her father's place after killing his child. Vowing to avenge on her the death of his child, the tiger, at once, went to the neighbouring village, where his wife's father lived, and lay in ambush behind the kitchen-room, thinking that when his wife would come there to throw away the scum of the boiled rice, he would pounce upon her and kill her then and there. In the meantime, the Brāhman girl was cooking rice in her father's kitchen. She perceived by smell that her tiger-husband was lying in ambush at the back of the kitchen, ready to seize and kill her. So she thought within herself that if she could take the tiger by surprise, she would be able to kill him. So she took a vessel-ful of boiling hot scum of rice and stealthily went to the backyard of the kitchen. Finding the tiger off his guard, she at once threw the whole contents of the vessel on him. Being terribly scalded by the hot scum, the tiger died then and there in the greatest agony. Thereafter, the Brāhman girl lived in her father's house.

The South Indian folk-tale runs to the effect that, in a certain village, there lived an old Brāhman who had three sons and a daughter. When the girl was very nearly grown up, her parents began to be eager about finding a bridegroom for her. Now near their village there lived a fierce tiger, that had attained to great proficiency in the art of magic, and could assume different forms. The tiger was very much desirous of marrying, if possible, a Brāhman wife, who would be able to cook for him nice tasty dishes of Brāhman food of which he was very fond. One day, hearing of the old Brāhman's daughter who was always falling in love with every beautiful Brāhman boy she came across, the tiger determined to win her for his wife. So the next morning, he assumed the guise of a learned Sāstrin* and, taking his seat near the *ghāt* of the sacred river of the village, opened the Rāmāyaṇa and began to read. The girl for whom he had assumed this guise, having come to bathe in the river, saw the new Sāstrin and fell in love with him. She was so mad with love for him that she told her mother all about it, and expressed a wish that she might be married to him. Her parents, being delighted at

* A Brāhman well-versed in the Shāstras.

the idea of having a learned Sāstrin for their son-in-law, soon agreed to the proposed match, and married her to him the next day. After the lapse of a month, the tiger-bridegroom expressed a wish to his father-in-law of returning with his bride to his own home. His parents-in-law having agreed to this proposal, they started the very next day on their journey. In the course of the journey, the Brāhman girl being very thirsty and hungry, expressed a wish to her husband that they should stop awhile and partake of the sweetmeats which her mother had provided them with for refreshments. But the tiger replied: "Be quiet, or I shall show you my original shape." Being thus put off, she pursued her journey in silence for some further distance. Being no longer able to endure the pangs of thirst and hunger, she again requested her husband to rest awhile and partake of some refreshments. To this request the tiger again replied by saying that she should keep quiet, or else he would show her his original shape. But, this time, the girl retorted by telling him to show her his original shape. No sooner were her words uttered than her husband's form changed from that of a human being to that of a tiger. Seeing his tiger's shape, the poor Brāhman girl was very much terrified. At last, they reached their journey's end; and the tiger conducted his human bride to his home. Thus passed many a day, till the Brāhman girl bore her tiger-husband a son which also turned out to be only a tiger. Nevertheless, she was very unhappy in the company of her tiger-husband. One day, writing on a palmyra-leaf a letter to her brothers describing her miserable condition in her new home, and requesting them to come over and relieve her, she sent it to them through a crow. Reading this letter, her brothers at once started for the tiger's place in the woods. On the way, they managed to get hold of an ass, an ant, a palmyra-tree and a big iron tub which they took with them to the tiger's place. The Brāhman girl was overjoyed to see her brothers once again. The tiger, having returned home in the evening and perceived the presence of human beings in his house by smell, asked his wife whether anyone had come to their house. The Brāhman girl replied that her brothers had come to see her, and that they would see him as soon as he would finish his meal. The tiger then asked his brothers-in-law to speak to him, whereon the youngest brother put the ant which he had in his hand into the ear of the ass; and, as soon as the latter was bitten, it began to bawl out most horribly. He next asked them to show him their legs, whereon the eldest brother stretched out the palmyra-tree. The tiger having then expressed a wish to see their bellies, the second brother showed the big iron tub, at which the tiger shuddered; and, saying that he had never heard of persons with such a harsh voice, so stout a leg and such a

big belly, he ran away. Wishing to take advantage of the tiger's terror, the Brāhman girl and her brothers, at once, made preparations for leaving the tiger's place. The tiger's human wife cut up her tiger-child into two pieces and suspended them over the hearth. Thus getting rid of the child, she ran off with her brothers towards home. Before leaving, she bolted the front door from inside, and went out at the back of the house. As soon as the pieces of the tiger-cub, which were hung up over the hearth, began to roast, they dripped, which made the fire hiss and sputter. When the tiger returned home at midnight, he found the door shut and heard the hissing of the fire, which he mistook for the noise of cooking muffins.† So he went round to the back door and entered his house, and was greatly perplexed to find his cub torn in two and being roasted, his house deserted by his Brāhman wife, and his property plundered. Discovering all the treachery of his wife and grieving for the loss of his son, the tiger determined to be revenged on his wife, and to bring her back into the wood, and there tear her into many pieces in lieu of only two. He, therefore, assumed his original shape of a young bridegroom, and, next morning, went to his father-in-law's house. His brothers-in-law and his wife saw from a distance the deceitful form he had assumed, and devised means to kill him. There was a well at the back of the house. The brothers-in-law spread a fine mat over the mouth of the well, and requested the tiger-Brāhman to take his seat thereon. As soon as he sat on it, the mat gave way, and down fell the cunning tiger with a heavy crash. The well was at once filled in with stones, and the tiger was thus prevented from doing any more mischief. But the Brāhman girl, in memory of her having married a tiger, raised a pillar over the well and planted a *tulaśī* (*Ocymum sanctum*) shrub on the top of it. Morning and evening, for the rest of her life, she used to smear the pillar with sacred cow-dung, and water the *tulaśī* shrub.‡

There is also partial similarity between the last two tales as regards some of the main incidents therein. In both the Bāngālī and South Indian stories, a tiger marries a Brāhman girl by force in the former variant and by fraud in the latter, and takes her to his own house in the forest. The girl lives with her tiger-husband, and, in course of time, bears him a tiger-child. Being unhappy in her new sphere of life, she makes up her mind to fly from her new home to her father's place. In both the versions, she kills the tiger-child and, suspending its carcase over the hearth, leaves it to roast over the fire. The tiger, in

† These muffins are called *tōsai* in Tamil.

‡ This Dravidian folk-tale is summarised from Kingscote's and Sāstrī's *Folk-lore of Southern India.*

both the cases, mistakes the hissing and fizzing of the oil in the Bāngālī variant, and the sputtering of the fire in the South Indian story, caused by the blood dripping thereon from the suspended carcase, for the frying of rice-cakes in the former, and the cooking of muffins in the latter case. Finding the doors shut, the tiger either bursts open the doors or enters the house by the back entrance, and finds the mangled remains of his child. Discovering the treachery of his wife, and grieving for the death of his child, the tiger vows to be revenged on her. So he goes to his father-in-law's place in his own guise as in the Bāngālī tale, or in the guise of a Brāhman Sāstrin as in the South Indian variant. But the wily wife discovers that her tiger-husband had come there only to avenge on her the loss of his child. So she kills him by throwing boiling-hot rice-scum on his body, as in the folk-tale from Bengal, or by throwing him into a well, as in the South Indian version. Thereafter, the Brāhman girl lives in her father's place, as narrated in both the variants, a pious finale being given to the story in the South Indian version, wherein the widowed girl raises a pillar over the well and plants a sacred basil shrub on its top in memory of her having married a tiger, and worships it morning and evening for the rest of her life. This great similarity between the two last Bāngālī and South Indian folk-tales raises the question whether the story found its way from one part of the country to the other, or whether it was independently evolved in Bengal and Southern India.

From the internal evidence of the aforesaid folk-tales, it can safely be inferred that they must have originated among, or derived their local colouring from, a primitive people. It is the habit of the savage mind to reason that men and beasts are all alike, and that the irrational animals can think and act in the same way as men. In the folk-tales narrated above, the jackal, the monkey and the tiger are represented as talking and acting like rational human beings. This shews that these tales must have had their currency among a people of the lower culture. In primitive communities, the barber often discharges the functions of a surgeon, opening ulcers, letting blood, extracting thorns and performing other surgical operations of a minor nature. He still discharges these functions in the backward and out-of-the-way villages of rural Bengal. That the heroes of the first two folk-tales narrated above had recourse to the village-barber for extracting the obnoxious thorns from their bodies, would seem to lend additional plausibility to the fact that the stories must have had their origin among a primitive people just emerging into the light of civilization.

These folk-tales also shew that the primitive people, among whom they had originated, had been subdivided into castes, as is evidenced

by the mention therein of the Brāhman, barber, potter, florist, tanner and the pariah. As the caste system originated among the Aryans after they had settled in the plains of Northern India, it may be presumed that the folk-tales in question might have been invented among an Aryan race of Northern India. To this may be due the survival, in its present form, of the nursery story of "The Jackal and his Nose" in Bengal. A considerable horde of the Aryan people had also penetrated into the forest-clad recesses of Southern India, and had not only infused the Dravidian races with a strain of their own blood, but also leavened them with their manners, customs and modes of thought. It is probable that these Aryan settlers might have taken these folk-tales with them into Bengal and Southern India. Indeed, the diffusion of myths and fables in identical or nearly identical forms all over the world, has been accounted for by the theory that they have been carried thither by settlers from foreign lands, traders, slaves, captives taken in war or by women forcibly carried away from their own people and settled as wives among people of an alien stock. All these factors, which introduce into the families alien women who invariably bring with them the fireside stories of their younger years and, by constant narration of these tales, diffuse the same in the country of their adoption, have to a certain extent favoured the migration of myths and fables from one country to another. But these tales are, in many cases, independently evolved, considering that the need for the invention of fables is inevitable among all people. Men, all over the world, feel the necessity for inculcating to their children or other ignorant people the great truths of religion or wisdom such as the triumph of right over wrong, the rewarding of the virtuous and the punishment of the wicked, &c., by means of word-pictures that would make them easily comprehended by the latter's undeveloped minds. The need for inculcating the same moral truth being felt by different peoples in the same level of culture, they would evolve, independently of each other, the identical or nearly identical form of fable for conveying the required lesson, for it is one of the axiomatic truths of the science of folk-lore that similar conditions of mind, feeling the same sort of necessity, produce similar practices and evolve similar kinds of fables, quite apart from the identity of race or the assimilation of other people's practices and ideas.

The conclusions that may be drawn from the study of the folk-tales, forming the subject-matter of this essay, may be briefly stated as follows:—

(1) These tales are probably of an Aryan origin, having been invented among one of the Aryan races, after it had settled in Northern India.

(2) A branch of the Aryan race, which migrated eastward towards Bengal, might have taken these tales with it to Bengal.

(3) Another branch of the same race, which settled in Southern India, might have carried the same tales thither.

(4) The similarity between the Bāngālī and South Indian versions of these tales can be accounted for only on the supposition that the aboriginal Bāngālī and Dravidian races assimilated the tales from these Aryan settlers, the slight variations between the said two versions being due to the difference between the two borrowing races as regards manners, customs and language.

X.—*Scraps of Hindu Folk-lore, No. II.*—*By* Pandit Rāmgharib Chaube. *Late Pandit to* W. Crooke, Esq., I. C. S. (*Retired*). *Editor of the North Indian Notes and Queries. Communicated by the Anthropological Secretary.*

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1. *Caste-hatred of the Bāris and the Musahars.*—In the eastern districts of the North-Western Provinces, there live two castes, namely, Bāris and Musahars, who have traditional hatred of each other, so much so that the one will not eat and drink from the hands of the other, and *vice versâ*. The tradition on which this hatred is based is as follows:—

In ancient times, some Musahars started on a journey. Their way lay through a forest. They, being very poor people, had with them neither a *lotā* (brass vessel) for taking out water from the well, nor the rope to pull it up with therefrom. It was mid-summer. They felt at noon very thirsty. They looked on this side and on that for a stream, but in vain. They then began to run at full speed in hopes of going beyond the woods soon and reaching some village where they might quench their thirst at a well. After a good deal of worry and trouble, they passed through the jungle and reached a village. It was, as ill luck would have it, a village of the Bāris. There was a well of fresh water in it, no doubt; but the difficulty of finding a *lotā* and a rope next stared them in the face. They went from door to door begging for the vessel and the rope, but the heartless Bāris turned a deaf ear to all their entreaties. They gave them neither a *lotā* nor a rope nor water. The long and short of the story is that they all perished for want of water before the very eyes of the Bāris; but the latter took no pity on the unfortunate Musahars. This circumstance is said to be responsible for the feelings of life-long animosity which the Musahars entertain for the Bāris.

The Bāris and Musahars earn their bread by the same craft, that is to say, by making cups and dishes of the leaves of the Palās tree (*Butea frondosa*), which are used in lieu of brassware dishes and cups by the natives of the Upper Provinces on the occasions of big feasts in which an unusually large number of persons have to be catered for. The Bāris eat the leavings of the food of the high-caste Hindus; and so do the Musahars.

There is, however, one peculiarity of the Musahars. They never eat the leavings at the house of the person who holds the feast. But the Bāris have no such scruples.

2. *Hindu Beliefs about the Heavenly Bodies.*—The orthodox Hindus do not consider the sun, the moon, and the stars as inanimate bodies. They believe them to be men—nay virtuous men of the highest class, who lived and played their parts piously, conscientiously and virtuously in this mundane world of ours in the golden age, and were, afterwards, canonized and assigned a place in the heavens, where they are to live for ever afterwards as a reward for their piety and virtue, and as an example to the human beings who are to be born in this earth after their times. As every student of Hindu history knows, the Kshatris or Rājpoots derive their lineage from the sun and the moon, and are, therefore, called *Suryabansi* and *Chandrabansi*, *i.e.*, of the solar and the lunar dynasties. In the Puranas, and other sacred books of the Hindus, many acts of these two great heavenly luminaries, performed by them during their existence on this earth, are described. Now-a-days the Hindu does homage to them, believing them to be most powerful gods and hoping to have his heart's desires fulfilled by propitiating them.

3. *The Sun.*—Sunday is the day of the sun, and hence it is called *Rabi-bār*. Every pious Hindu fasts on this day, and repeats mantras or incantations in honor of this deity. The most popular book which every orthodox Hindu in the N.-W. Provinces reads on Sunday after performing his ablutions, putting on a pure and clean loin-cloth, sitting on a piece of ground plastered with clean mud, and burning incense to him, is the *Surya-purāna* or the Book of Legends concerning the Sun-god. In the evening of this day, the fasting Hindu eats bread, milk and sugar. He avoids all food in which salt is used as an ingredient of cooking or of relish. No fasting Hindu eats after sun-set on this day. People suffering from skin-diseases in general, and from leprosy in particular, resort to the pious practice of propitiating the Sun-god for the reasons stated in the following couplet which is almost on every Hindu's lips in the N.-W. Provinces :—

Kushṭhrog ho jāke aṅga,
So nit karai purān prasangā,

i.e., those who are suffering from leprosy should read the *Surya-purān* or the Book of the Legends about the Sun-god.

Diseased persons generally worship the sun daily by reading the *Surya-purān* after bathing. To offer oblations of water to the sun after bathing is the compulsory duty of every high-caste Hindu. Even Rājās and great men abstain from all sorts of animal food on Sundays for fear of offending the Sun-god. In every temple of importance, images of the sun and the moon are kept, where they are most piously wor-

shipped by the temple-priest daily, along with other idols. In many sacred places throughout Hindudom, there are tanks named after the sun, wherein the orthodox Hindu makes it a particular point to bathe at any cost and trouble, believing that the be-all and end-all of his existence would be realized by such a pious act. The tanks are known in the vernacular as *Surya-kund*. As an act of piety, the pious Hindu salutes the rising and the setting sun daily. To go a step further, every high-caste Hindu performs his *sandhyā* or worship of the sun at sun-rise and sun-set; some at noon too when the sun is in the zenith. On every Sankrānt day, or the day on which the sun passes from one zone to the other, the Hindu makes gifts to the Brāhmans in order to propitiate the Sun-god. Of these Sankrānts, the two following are the most important. These two Sankrānts are observed as festivals by every Hindu, be he a prince or a peasant. These sun-festivals or Sankrānts are observed in the N.-W. Provinces, Behar and the Central Provinces where the people's language is Hindi, as the *Khichari Sankrānt* and the *Sātuā Sankrānt*. The former takes place in mid-winter, and the latter in mid-summer. On the occasion of the former festival, the Hindu presents gifts of rice and *urid* pulse (*Phaseolus radiatus*) mixed together; and on the occasion of the latter, he makes presents of sātuā, or barley and gram (*Cicer arietinum*) parched and powdered, and molasses. In this way, the sun is worshipped by an ordinary Hindu of the orthodox school, and held by him to be one of the most powerful of deities.

4. *The Moon.*—This luminary is believed to be a rather less powerful god than the sun, for we see that, except on certain fixed occasions, the Hindus in general do not care to gain the favours of the Moon-god by offering presents to her or reading incantations. I purpose to describe below the occasions on which the moon is propitiated, as also the method by which she is generally worshiped. On the day of the new moon, every Hindu salutes the moon and prays for his own as well as for his family's general prosperity and long life. But to salute the moon on the day of the new moon empty-handed is unlucky. So those who can afford to do so, generally take a gold or silver coin in the hand, and then salute the moon. After the salutation is made, the coin in the hand is given to a Brāhman as a new-moon present. On certain Full Moon Days, fairs are held in sacred places, and thousands of Hindus go to bathe in a sacred stream. The most important of these are the Full Moon Days (*Kārtikī Purnimā*) of the month of Kārtik (October-November), and *Māghī Purnimā* of the month of Magh (December-January), when fairs are held at the confluence of the three sacred

streams, namely, the Ganges, the Jamunā, and, that mysterious stream of the Hindu geographers, the Saraswatī, at Allahabād or sacred Prayāg, also at Hardwār, and at Nasik in the Bombay Presidency. Besides these places, the banks of other sacred streams are also resorted to for bathing purposes by those who cannot afford the expense and trouble of travelling to important holy places. Now-a-days tanks or pools dedicated to the moon are found, but very rarely, in Northern India. But it seems that, in ancient times, such tanks and reservoirs of water were common enough. In the Sakuntalā Nātak (Lost Ring) of Kālīdāsa, we find that it is during the absence of Kanwa Rishi, the reputed father of Sakantalā, who had gone to *Som-tirtha*, or the tank dedicated to the moon, to bathe therein and bring some water thereof to sprinkle on Sakuntalā in order to prolong her life and render her free from diseases, Dushmant appeared in the hermitage and fell in love with Sakuntalā. From this, one may conclude that *Som-tirthas* were very common and popular with the people in those days. The moon is called in Sanskrit, the sacred language of the Hindus, Aushadhi-pati (ओषधिपति), that is to say, the master of medicines. The Hindus believe that all medicinal plants to be found in nature derive their medicinal properties from the rays of the moon, and hence the name. The sacred drink of the ancient Hindus, Som-juice, was extracted from the plant named after the moon, Som-latā or Moon-creeper. In order to render their persons strong and free from all internal and external diseases, the Hindus observe a festival—nay Moon-festival—on the Full Moon Day of the month of Kuār (September-October), or at the end of the rainy season, when the moon is in the brightest of her glory, and her rays strongest, and call it Sharat-Puno or the Full Moon of Winter. On this day every well-to-do Hindu dresses his family idols in snow-white garb and places them on a gorgeous high seat on the roof of his house and, spreading a white sheet on the roof, makes his friends and relatives, who are also dressed in white like their idol-god, sit in rows on it. Then he offers to the idol sweets and white flowers in abundance, and worships the god in various other ways. The sweets are left out in the open air on the roof all through the night; and in the morning, they are destributed among the friends and relatives, who eat them with much relish and feelings of respect, because they believe that the sweets will free them from all diseases, considering that the said eatables have been exposed to the rays of the moon who is the mistress of the medicines, the whole night when that deity is in the brightest of her glory, and her rays are the strongest. Those who cannot afford to observe this festival on such a grand scale, put a cup of sweets on the roof of the house, and let it remain there the whole night. In

the morning, they distribute it among the members of their families. They all eat it, and believe to have earned the same merit that their richer brethren have done by their more expensive observance of this moon-festival.

The moon is said by the Hindus to be the son of the ocean inasmuch as he is believed to have come out of it, when it was churned by the gods and the rakshashas. The father has naturally love for the son. The ocean has, therefore, love for the moon, so much so that on every full-moon day, it rises to a great height to take the moon once more into its lap and caress it; but the moon being far far away from the ocean, it cannot succeed in attaining its object. Such is, at least, the belief of an average Hindu all through India.

The women in the N.-W. Provinces consider the moon to be a female. The marks in her are, according to their belief, the shadow of a woman who sits in her and spins thread on a spinning wheel (*charkhā*).

Taking the baby in her lap, the Hindu mother sings the following lullaby in the evening when the moon appears in the sky:—

Chandā māī dhāy jā, dhupāy jā, dudh bhāt kai katorā bhaiá ke munh men dāri jā ghutuk deu

(चंदा माई धाय जा, धुपाय जा, दूध भात कै कटोरा भय्या के मुंह में दारि जा घुटुक दें),

i.e., O mother moon, come quickly along the great way with a cup full of milk and cooked rice and put it [the milk and rice] off-hand into the mouth of the baby.

Again, the old Hindu mother of the village teaches the boys of her family at night when they sit surrounding her on a mat, that the stars are the kine of the Bhagwān or God, and that the moon is their keeper (*charwāhā*). During the whole night, which is but day to the great God Bhagwān, the moon leads the stars from one jungle to another for grazing purposes; and in the morning, which is but evening to the great God Bhagwān, she drives them into their pen; and herself, retires to the house of Bhagwān where she gets food and sleeps. It is owing to this that the moon and stars are seen at night, but not in the day time.

5. *The Dhrub or North Star.*—The never-stirring North-star is called in the vernacular the Dhrub Star. This star is believed to be a pious Rājā of the same name. His story runs as follows:—

In the days of yore, there was a Rājā named Uttānpād who was the son of Swāyambhuva Manu (स्वायम्भुव मनु) by his wife Satrupā. This Uttānpād Rājā had two wives. The elder wife begot a son who was named Dhrub. The Rājā loved the younger queen most. One

day it so happened that the child Dhrub went and sat in the lap of his father Uttānpād while the Rājā sat in company with his younger queen. The younger queen grew angry with Dhrub on his sitting in his royal father's lap. She dragged the child out of his father's lap to the ground, saying "Hadst thou been born of me, thou couldst sit in the lap of the Rājā." This meant that Dhrub was not to succeed his father on the throne after his demise, only because he was not born of the queen whom his father loved most. These words of his step-mother cut him to the quick. He ran crying bitterly towards the palace of his own mother. In the way he met Nārad Muni, who enquired into the cause of his sorrow. The child told the sage what had happened to him. The sage advised him to repair to the woods and practise austerities there. The child acted up to the words of the sage. He went to the forest and, for many a long year, practised penances of the severest nature. Rām or God was at last pleased with him. He appeared before him and blessed him, saying that he would rule over the dominions of his father for thousands of years, and, on his death, get a place in heaven whence he would never never be removed. Dhrub then returned to the city of his father. The father welcomed him heartily. Uttānpād, the father of Dhrub, abdicated his throne in favour of his son and went to the forest to practise austerities and end his days there. Dhrub ruled in his father's place for thousands of years piously and conscientiously and, afterwards, went to heaven where he has got a place in the North, whence he never stirs. This is the reward of his piety. Such is, at least, the belief of the Hindus all over India.

6. *The Agastya Star.*—In the beginning of the cold weather appears in the sky a star which is believed to be Agastya Muni of the Hindu mythology. It is said that when this star appears, it begins to suck up the water which the rainy season has poured on the earth. The following line of the Rāmāyan of Tulsi Dās may be cited in proof of this belief:—

उदित अगस्त पंथ जल सोखा । जिमि लोभहिं सोखै संतोखा ॥

i.e., The Agastya star, appearing in the sky, has sucked up the water on the road in the same way as contentment sucks up covetousness.

Another name of Agastya Muni is Kumbhaj Rishi. It is related of him that once he was performing his twilight worship on the sea-shore. He had put flowers, rice, sandal and other articles of worship before him. The sea had the insolence to sweep away the articles of worship once. He told the sea not to do so again. The sea did not mind him. It repeated the insolence thrice. The saint then grew very angry and,

in three handfuls, drank up the entire sea. The sea became empty. The gods then came in a body before him and began to pray to him. Then the saint vomitted the sea-water which he had drunk up. The sea then came into existence again. The same Kumbhaj or Agastya Rishi has found a place in heaven where he appears but periodically.

7. *The Ākāsh-Gangā or Milky Way.*—In the opinion of an average Hindu, the Milky Way is nothing but the Ganges of heaven. In the opinion of the Hindus, the Ganges of this world has its branches in heaven or the upper world and the lower world or Pātāl. As the Ganges of this mortal world purifies mortals, so do its branches in the upper and the lower worlds.

XI.—*On the Kurmīs of Bihār, Chutiā Nāgpur, and Orissa.*—By G. A. Grierson, C.I.E., I.C.S., Ph.D.

[Received August 19th; Read November 2nd, 1898.]

Regarding this caste Mr. Risley on page 528 of his *Castes and Tribes of Bengal* writes as follows:—

"Kurmi, Kunbi, Kurambi,—a very large cultivating caste of Upper India, Behar, Chota Nagpur, and Orissa. Their origin is obscure, and their meagre traditions throw no light upon the subject, being for the most part mythological tales of a trivial character, or legends relating to recent migrations of comparatively small sections of the caste."

* * * * * *

Mr. Sherring and Mr. Nesfield treat the caste as an accomplished fact, and venture on no conjecture regarding its probable origin. Sir George Campbell, speaking of the Kurmis of Hindustan, says they are on an average darker and less good-looking than Brahmans and Rajputs, but still quite Aryan in their features, institutions, and manners. Colonel Dalton regards them as the descendants of some of the earliest of the Aryan colonists of Bengal—"A brown tawny-coloured people, of average height, well-proportioned, rather lightly framed, and with a fair amount of good looks. They show well-shaped heads and high features, less refined than Brahmans, less martial than Rajputs, of humbler mien even than the Goālās; but, except when they have obviously intermixed with aborigines, they are unquestionably Aryan in looks. Grey eyes and brownish hair are sometimes met with amongst them. The women have usually small and well-formed hands and feet."

The foregoing description clearly refers only to the Kurmis of Behar, who are on the whole a fine-looking race, though perhaps hardly so Aryan in appearance as Colonel Dalton seeks to make out. The caste bearing the same name in Chutiā Nāgpur and Orissa belongs to an entirely different type. Short, sturdy, and of very dark complexion, these Kurmis closely resemble in feature the Dravidian tribes around them. In Mānbhūm and the north of Orissa it is difficult to distinguish a Kurmi from a Bhumij or a Santāl, and the latter tribe, who are more particular about food than is commonly supposed, will eat boiled rice prepared by Kurmis; and according to one tradition they regard them as half-brethren of their own, sprung from the same father, who begot the Kurmis on the elder and the Santāls on the younger of two sisters. The distinct and well preserved totemism of the caste is noticed at length below.

The question then arises: Are these Kurmis a degraded branch of the Kurmis of Behar and Upper India, or should they be treated as a

separate caste formed out of Dravidian elements and owing their name to the accident of their having devoted themselves exclusively to cultivation? Colonel Dalton does not distinctly commit himself to either view; but it is clear from his account of the caste that he was conscious of the difficulty, and was inclined on the whole to dispose of it by the hypothesis of degradation. This theory, however, fails entirely to account either for the remarkably uniform type of the Chutiā Nāgpur Kurmis or for their totemistic usages. The latter point, however, appears to have been unknown to Colonel Dalton, and might possibly have induced him to change his opinion. Three hypotheses seem to be more or less tenable:—(1) that the class Kurmi is made up of two distinct stocks, the one Aryan and the other Dravidian; (2) that the entire group comes of an Aryan stock, the type of which has been modified to a varying extent by mixture of blood and vicissitudes of occupation; (3) that the entire group was originally Dravidian, but that those portions of it which lay in the track of the Aryan invasion were refined by intercourse with the immigrants, while those who settled in remote parts of the country preserved their primitive type.

It will be seen that the Kurmīs of Bihār differ considerably from those of Chutiā Nāgpur and Orissa. They have different customs, different appearance, and, so far as I have been able to ascertain claim no relationship with each other. The Linguistic Survey has, in addition, shown me that they speak different languages. I think that it is erroneous to suppose that the two so-called sections form one caste. The mistake has evidently arisen from incorrect transliteration. The "Kurmīs" of Bihār are an Aryan race, and they spell the name of their caste कुरमी *kurmī*, with a smooth र *r*. The tribe, on the contrary, which is numerous in Chutiā Nāgpur and Orissa (especially in the Tributary States of the latter Province and in Mānbhūm and the east of Singhbhūm) spells its name कुड़मी *kuṛmī*, कुड़ुम *kuṛum*, or कुडुम *kuḍum*, all with a hard ड़ *ṛ* or ड *ḍ*. I find from inquiry that the Mānbhūm people know of the Bihār tribe, and carefully preserve the difference of spelling. In Mānbhūm, the aboriginal tribe is called कुड़मी *kuṛmī*. It has a sub-tribe, called कुड़ुम *kuṛum*, the members of which aver that they are the original nucleus of the entire caste. They claim close connexion with the Santāls, and one of their main totems is the tiger, the Santālī for which is *kul*, while in another Kolarian language, Muṇḍārī, it is *kulā*, and in another, Khaṛiā, *kiṛō*, with a change of ल *l* to a hard ड़ *ṛ*. Their language, which is a mixture of Bihārī and Bengali, with several aboriginal words added, is called, in Mānbhūm कुड़माली *kuṛmālī*, and in the Orissa Tributary States, कुड़ुमाली *kuṛumālī*.

XII.—*Note on the Hāṛi-Āllāh sect.*—*By* Maulavi Abdul Wali.

[Received 23rd August; Read 2nd November, 1898.]

In certain parts of the Districts of Jessore and Nadiya, and probably in other Districts, the Bāgdis and Bunās-men who were originally brought as Coolies by indigo planters from Ranchi and Purulia and other places, believe in a curious doctrine. They hold that Balaram and Hāṛi-Āllāh are the same person. Because Āllāh is the hāṛ or bone, therefore he is called Hāṛi-Āllāh—a curious bit of grammatical construction, indeed! They argue thus:—As we know a house by seeing its constructor; or by seeing a cultivated field, the cultivator: so by seeing man we know Hāṛi-Āllāh, or Balarām. They also say,

Muk Makkā, Dil Kuran
Hāṛēr upar Chāṃ
Taitē balēchē Balarām.

There is neither grammar nor sense is this. But this may mean that "Man's mouth is Mecca, and his heart the Qurān. The skin is over the bones—So says Balarām."

I have heard that a certain Brahman is their Guru, who comes to them now and then, and who himself is called Balarām. I am not yet aware as to the extent and scope of this sect. No Musalman is known to believe in this doctrine. The people who hold this sort of doctrine are so ignorant and foolish, that it is almost impossible to extract from them the exact nature of their belief.

XIII.—*Note on the Chitliyā Faqīrs.*—*By* Maulavi Abdul Wali.

[Received 23rd August; Read 2nd November, 1898.]

About 24 miles north of the head-quarters of the District of Pabna in Eastern Bengal is situated the village of Chitliyā. There lived some forty years ago Sambhu Chānd, a fisherman of the Rājbansi caste. This Sambhu Chānd as well as others were fishing far away from home, when there appeared a Sanyāsi. The latter asked the fisher folk to ferry him across the river. All declined. The Sanyāsi then went to Sambhu Chānd, who was casting nets to catch fish close to where he (the Sanyāsi) was and made the same request to him. Sambhu consented. The Sanyāsi seeing the fisherman coming forward, sat down, and said to him "I cannot walk." Sambhu stepped forward and saw that the Sanyāsi had ulcers on his whole body. Not hesitating, Sambhu took the holy man in his arms, and placed him on board the fishing-boat. While in the middle of the river, the Sanyāsi being pleased at the

conduct of the fisherman said to him, "Sambhu why do you not ask something from me?" "Holy man," Sambhu replied, "I want *you* only." The holy man blessed him, and said, "I shall always appear to you whenever you will require me."

The Sanyāsi landed. The *māchāl* or bamboo platform of the boat, on which the Sanyāsi was seated, had turned into gold. The Sanyāsi told Sambhu to cast his nets once only and be contended with the fish that would be caught. The Sanyāsi then disappeared, but not before he had wrought another miracle. The carcase of a *Nilgāi* (a kind of animal) was lying on the river bank. The holy man placed his hands upon the carcase and lo! the animal again came into life.

Sambhu returned home from his fishing expedition. Thenceforth he began worshipping the Sanyāsi, who became his Guru. To whomsoever he used to give dust and oil, they used to regain health and get what they wanted. His fame spread far and wide, and people flocked to him from every quarter, but not so his own zemindar, who became disgusted and displeased with Sambhu and his rising fame. In order to try him, he had a snake wrapped in plantain leaves, and sent it to Sambhu by his servant. The servant was only told that it contained *Sandis* (a kind of sweetmeat) for the holy fisherman. The present was duly received; but Sambhu, without unwrapping the leaves, said to place it amid the assembled multitude of devotees. On opening, it was seen to contain real *Sandasas*. One of these was sent, as a present, to the zemindar through the same servant. The zemindar, however, found fault with the bearer, and severily chastised him. The servant came to Sambhu Chānd and complained to him about the treatment of the zemindar. Soon after this the landlord and all the members of his household became ill, and remained confined to bed. There were none to nurse or enquire after them. At last word was sent to Sambhu Chānd. Good Sambhu came. The zemindar was lying very ill in the family quarter. Sambhu asked the zemindar to come out. The zemindar said, "How can I come, I am so ill, Sambhu may come in." But by this time he was able to sit on his bed with the help of a pillow. Sambhu persisted that he must come out, but the landlord expressed his inability to walk, but this time he had improved so much, that he was able to stand up. On the next time he was able to walk a little. At last, little by little, he was enabled to come out and see the holy person. In this way all the members of the household recovered their health. In grateful acknowledgment of the services rendered, the landlord made a free gift of the tenure with the house and *Mandir* to Sambhu Chānd, and he himself became one of his followers.

There are many other curious stories related by the sectarians which it is needless to narrate here.

Such was Sambhu Chānd, the fisherman of Chitliyā, and such was the origin of the order. The corner-stone of the sect is to believe implicitly the hukam, the āṇgyā, or the command of the Guru. All kinds of disorders are cured by his hukam. They say there is no secret other than the faith in the spiritual guide and his order. The āṇgyā or command is qualified by a faith in the order founded by the fisherman of Chitliyā.

Every year during the Dōl festival in March-April, members of the order from all parts come and assemble at Chitliyā, where every one is fed at the expense of the presiding Guru of the family of Sambhu Chānd *once*, on the day of the arrival of the devotees. The *Kalima* of Islam is recited and blown upon the food, before it is eaten. But the cooks are all Brahmans. Every housewife who believes in the order lays by a handful of rice during every meal, which is made over to the Guru or Faqīr, and by him sold. In this way a considerable sum of money goes to the coffers of the Chitliyā Guru. Out of this all the expenses are defrayed. The members of the order are not many, and are confined to Pabnā and the neighbouring Districts.

At the death of Sambhu Chānd, his son Sādhu Chānd buried him and built a *Mandir* over his grave. When Sādhu Chānd died, his son Muhanta Chānd—the present Arch-Guru and head of the order—also buried his father, and built a *Mandir* over his grave.

All the sectarians of this order—Hindus and Muhammadans—use rosaries, by which they count their prayers daily. They also wear iron bracelets, and do not smoke the same hubble-bubble already smoked or used by others, nor do they eat food that may have been already tasted or touched, that is to say, that these conditions are binding upon the principal votaries. The laity only believe, and save the handful of rice, and go in fulfilment of vows that are made, to Chitliyā.

When a new convert is made, or if an old disciple comes before the principal Faqīr or Guru, the following *bhajan-bakya*, or formula, is invariably to be recited by the convert or the disciple:—

Allār hukum dharmē mānē
Allār hukum karmē mānē
Chausatti rōgē mānē
Saṛē tin hazar dēo daitya mānē
Ashi hazar pir paigambarē mānē
Bis koti devata mānē
Tumi māno?
Āllā solo ānā bhālo rakhibēn
Satya balilē?
Kār kachē balilē?
Āllār kachē balilām.

This can be rendered into English thus :—

God's command is obeyed by religion
God's command is obeyed by action
Obeyed by sixty-four ailments
Obeyed by three thousand and five hundred deos and daityas
Obeyed by eighty thousand saints and prophets
Obeyed by twenty crores of devotees
Do you obey (it) ?
God will keep you all right (16 annas=fully)
Have you told the truth ?
To whom did you tell ?
To God.

The Hindu devotees use the word Guru for Āllāh, but according to these sectarians both are convertible terms.

XIV.—*Note on some tribal and family names employed in speaking of the inhabitants of the Lushai Hills.*—*By* Major John Shakespear, C.I.E., D.S.O., I.S.C., *Superintendent of the Lushai Hills. Communicated by* Dr. G. A. Grierson, C.I.E., I.C.S.

[Received September 26th; Read December 7th, 1898.]

Lushai is our way of spelling the word, the proper way to spell the word, so as to represent the actual sound, as spoken by the people, is Lushēi. The term includes a number of families, among which are the following: Sailo, Thangloa, Rivung, Jadeng, Rokum, Pallian, Pachua, Haonar, Chenkual, Choahang, Changte, Chongte, Hualgno, Hualhang. (The Hualgno are the tribe spoken of by the Chin Hills officers as Whenoh). There are probably other families that claim to be true Lushēis. The term Dulien is also applied to these families, and the language spoken by all these families is known as Lushēi or Dulien. These Lushēis have conquered and broken up all other communities which formerly had separate villages in the hills. So completely has this been done that when we occupied the hills, nearly every village was ruled by a chief of one of the following families, *viz.*, Sailo, Thangloa, Pallian, of these the Sailo were far the most numerous, in fact to-day, the number of houses in villages not ruled by Sailos is insignificant. The Lushēis, having conquered the other clans and absorbed them to a great extent, it is natural that the Lushēi language has come to be the language of by far the greater number of people in the hills west of the Tyao-Koladyne line.

The people who inhabit this area and who are not Lushēis may be divided into (*a*) tribes conquered and absorbed by the Lushēis, (*b*) immigrants from the Chin Hills, who have come across the Tyao-Koladyne line and seized land by force of arms, (*c*) the Fanai.

Among (*a*) are Ralte, Hmar, Paithe, Vanchia, Kolhring, Nennte, Powtu, and innumerable others. Most of these if they ever had a separate language have lost it now and speak only Lushēi. The Hmar and the Ralte are still numerous and keep together and thus their dialects have survived. All these people are indistinguishable from Lushēis in their appearance and only differ in a few of their customs and methods of sacrificing.

(*b*) Among these are the Jahow, more properly Jahao, in the northern hills and the Lakhers and other immigrants from round Haka in the southern hills. These people speak their own languages, and if their progress had not been arrested by us they would have made an effort to drive out the Lushēis. Their customs and languages differ from those of the Lushēis in many particulars.

(*c*) The Fanai are a very small family, the first Fanai to be considered a chief, was the grandfather of the present Fanai chiefs, of whom there only seven, who rule some 800 houses. They speak Lushēi.

It must be clearly understood that there are no tribes as we understand the term. In former official correspondence the Syloo tribe and the Thangloa tribe are spoken of, and it was thought that all people living in these communities were Syloos (Sailos) or Thangloas, whereas Sailo, Thangloa, etc., are really only the names of individual families to which the chiefs belonged, the villages ruled by these chiefs being inhabited by representatives of many different families. I have just succeeded in tracing out the pedigree of the Sailo, who are also called Thangur through 13 generations back to Thangurra the founder of the family and grandfather of Sailoa, whence the family took their name.

CONTENTS OF VOL. LXVI. FOR 1897.

PART I.—HISTORY, LITERATURE, &c.

No. 1.—Smith, Numismatic Notes and Novelties (Ancient and Mediæval India). Vasu, Mēghēçvara Inscription of Svapnēçvara Dēva of Orissa. Irvine, Nādir Shāh and Muḥammad Shāh, a Hindi poem by Tilōk Dās. Pandia, The Antiquity of the poet Nāgarī Dās and his concubine Rasik Bihārī *alias* Baṇi Thāṇī. Waddell, Upagupta, the fourth Buddhist Patriarch, and High Priest of Açōka.

No. 2.—Pargiter, Ancient Countries in Eastern India. Hoernle, The Gauhāṭī Copper-plate Grant of Indrapāla of Pragjyōtiṣa in Āsām.

No. 3.—Hoernle, On some New or Rare Hindu and Muḥammadan Coins, No. IV. Bomford, Pronominal Adjuncts in the Language spoken in the Western and Southern Parts of the Panjab. Pandia, Separation of Banswara from Dungarpur State in Rajputana. Burn, The Bakhtiārī Hills, an itinerary of the road from Iṣfahān to Shushtar. Grierson, On the Kāçmirī Consonantal System. Haig, A Comparative Vocabulary of the Gōṇḍī and Kōlāmī Languages. Drake, The Story of the Prodigal son, translated into the Kurku Language. Dutt, Notes on the Vernacular dialects spoken in the district of Sāran.

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PART II.—NATURAL SCIENCE.

No. 1.—King, Materials for a Flora of the Malayan Peninsula.

No. 2.—Prain, Noviciæ Indicæ XV. Some additional *Leguminosæ*. Prain, Noviciæ Indicæ XVI. More additional species of *Labiatæ*. Finn, On some noteworthy Indian Birds. Finn, Contributions to the Theory of Warning Colours and Mimicry. No. III. Experiments with a Tupaia and a Frog. Nicéville, Description of *Neptis praslini*, Boisduval, and some species allied to it.

No. 3.—Nicéville, On New or Little-known Butterflies from the Indo- and Austro-Malayan Regions. King and Pantling, Some new Indo-Malayan Orchids. Watson, Notes on some Butterflies from Myingyan, Central Burma.

No. 4.—Finn, Contributions to the Theory of Warning Colours and Mimicry. No. IV. Experiments with various Birds. Summary and conclusions. Nicéville and Elwes, A list of the Butterflies of Bali, Lombok, Sambawa and Sumba. Osmaston, On the manifestation of Social Instinct in the Common Babbler (*Crateropus canorus*). Finn, Notes on various species of Grebes, with especial reference to the power of walking and digestion possessed by these birds.

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Under orders of the Council the following system of transliteration will be adopted for the future in all publications of the Society. Authors of papers for the *Journal*, Pt. I, are particularly requested to adhere to it in their contributions.

A. FOR THE DĒVANĀGARĪ ALPHABET, AND FOR ALL ALPHABETS RELATED TO IT.

अ *a*, आ *ā*, इ *i*, ई *ī*, उ *u*, ऊ *ū*, ऋ *ṛ*, ॠ *ṝ*, ऌ *ḷ*, ए *e*, ऐ *ai*,
ओ *o*, औ *au*, ं *ṁ*, ँ ~ : *ḥ*

क *k*,	ख *kh*,	ग *g*,	घ *gh*,	ङ *ṅ*
च *c*,	छ *ch*,	ज *j*,	झ *jh*,	ञ *ñ*
ट *ṭ*,	ठ *ṭh*,	ड *ḍ*,	ढ *ḍh*,	ण *ṇ*
त *t*,	थ *th*,	द *d*,	ध *dh*,	न *n*
प *p*,	फ *ph*,	ब *b*,	भ *bh*,	म *m*
य *y*,	र *r*,	ल *l*,	व *v*,	(ळ *ḷ*)
श *ś*,	ष *ṣ*,	स *s*,	ह *h*.	

In the above the *virāma* has been omitted for the sake of clearness.

In Modern Vernaculars only; ऋ may be represented by *ṛ*, and ढ़ by *ṛh*.

Avagraha is to be represented by an apostrophe, thus सो ऽपि *sō 'pi*. *Visarga* is represented by *ḥ*, *Jihvāmūlīya* by *ḫ*, and *Upadhmānīya* by *ḭ*. *Anusvāra* is represented by *ṁ*, thus संसर्ग *saṁsarga*, and *anunāsika* by the sign ~ over the letter nasalized, thus अँ *ā̃*, आँ *ã̄*, and so on. The *udātta* accent is represented by the sign ´ and the *svarita* by ˆ. Thus, अग्निः *agníḥ*, जनिता *janitā́*, क्वा *kvā́*, कन्या *kanyā́*. The *anudātta* accent may be represented by ˋ. Thus, ते अवर्धन्त *tḕ àvardhanta*.

B. FOR PERSIAN (INCLUDING ARABIC WORDS IN PERSIAN) AND HINDŪSTĀNĪ.

(*The system is not applicable to Arabic when pronounced as in Arabic-speaking countries*) :—

Vowels.	Consonants.	Sounds only found in Hindūstānī.
اَ a	ب b	بھ bh
آ ā	پ p	پھ ph
اِ i	ت t	تھ th
ای ī		ٹ ṭ
اے ē		ٹھ ṭh
اُ u	ث s	
او ū	ج j	جھ jh
او ō	چ c	چھ ch

Vowels.	Consonants.	Sounds only found in Hindūstānī.
ـَیْ ai	ح ḥ	
ـَوْ au	خ kh	
	د d	ڈ dh
		ڈ̣ ḍ
		ڈھ ḍh
	ذ z	
	ر r	ڑ ṛ
		ڑھ ṛh
	ز z	
	ژ zh	
	س s	
	ش sh	
	ص ṣ	
	ض ẓ	
	ط ṭ	
	ظ ẓ	
	ع ‘	
	غ gh	
	ف f	
	ق q	
	ک k	کھ kh
	گ g	گھ gh
	ل l	
	م m	
	ن n	
	ں when representing *anunāsika* in Dēva Nāgarī, by ˜ on the preceding vowel	
	و w (or rarely v)	
	ہ h	
	ی y	
Hamzah	ء (where necessary) ’	

The ل of the article ال in Arabic words should be assimilated before the solar letters; and the vowel *u* which often precedes the article and absorbs its vowel should remain attached to the word to which it belongs. Thus—اقبال الدولہ Iqbālu-d-daulah.

Tanwīn may be rendered by *n*—e. g., *ittifāqan*. *Alif-i maqṣūrah* should be rendered by *ā*.

Final ہ need not be written in Persian and Hindūstānī words, but should be written in Arabic words.

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL.

Part I.—HISTORY, LITERATURE, &c.

No. I.—1898.

Notes on new inscriptions discovered by Major Deane.—*By* M. A. Stein.

Part I.

(With Plates I–VII.)

[Read December, 1897.]

It was in the autumn of 1894, that a paper read by M. Senart, before the Tenth International Congress of Orientalists and subsequently published in the *Journal asiatique*[1] drew the attention of all Indologists to the remarkable series of epigraphical documents, which the zeal of Major H. A. Deane, C.S.I., then Deputy Commissioner of Peshawar, had brought to light on the northern border of this district and in the independent territory beyond it. These inscriptions from the ancient *Gandhāra* and *Udyāna* have attracted all the more interest as the characters which appear in the great majority of them, have previously been wholly unknown and differ strangely from any known system of Indian writing.

Major Deane has since continued his epigraphical search with unfailing energy, notwithstanding the heavy and responsible official duties which his appointment as Political Officer during the Chitral campaign and subsequently as Political Agent for Swat and Dir must

[1] *Notes d'Épigraphie Indienne.*—V. *Les Récentes Découvertes du major Deane*, Journal asiatique, 1894, tome iv., pp. 332–353; 504–518. Also in reprint, *Notes d'Épigraphie Indienne*, Fascic. 5., 1895.

have thrown upon him. The exceptional success which has attended his efforts in the interest of research, is amply illustrated by the fact that the number of new inscriptions which he has forwarded to Lahore since M. SENART'S publication, is nearly twice as great again as the number comprised in the latter. These epigraphical documents have reached Lahore either in the form of the actual stones where these were obtainable, or as ink impressions on paper or cloth, taken by Major DEANE'S agents in the case of inscriptions beyond British territory which could not be secured otherwise.

The stones with inscriptions have been deposited without exception in the Lahore Museum which contains now also the stones previously communicated to M. SENART for publication. In order to keep together in the same place, as far as possible, all that bears on the epigraphy of those interesting regions, Major DEANE has been kind enough to entrust to me the impressions above referred to. For this mark of confidence which I must value all the more in view of the great trouble and the expense connected with the collection of these materials, I may be allowed to express here publicly my grateful acknowledgments.

By making me in this manner the depositary for at least a part of his discoveries, Major DEANE has also, as it were, put me under the obligation of bringing them to the notice of fellow students. From a personal point of view I might well have wished that the honour of this first publication may have fallen on one more competent than myself and better able to do it justice. The want of necessary leisure at Lahore and the obligation of devoting whatever time was at my disposal in Kashmir to my translation of Kalhaṇa's Chronicle, have prevented me from making that minute study of the inscriptions 'in unknown characters' which seems indispensable even for the slightest advance towards their decipherment. As these inscriptions form the great majority of the new finds, I must also regret my want of acquaintance with that field of philological research which, as will be seen below, might possibly furnish a clue to these puzzling documents.

Under these circumstances, I hope to meet best the interests of those who are in a position to undertake a serious study of these monuments, if I avail myself without further delay of the opportunity offered by the Asiatic Society's kindness in order to publish the new inscriptions in unknown characters in faithful mechanical reproductions. To the latter I have added such information regarding the find-spots, present condition, etc., of the inscriptions as Major DEANE has communicated either along with the inscriptions themselves or in subsequent letters addressed to me. My own remarks must necessarily be restricted to a few observations which the examination of the docu-

ments themselves and the grouping on the map of their places of origin have suggested to me.

In a separate notice I intend to discuss the few short Sanskrit inscriptions in Çāradā characters which have reached Lahore along with those in unknown characters.

The order in which the inscriptions have been shown in the following list, is chiefly based on topographical considerations which will be explained below. I have indicated for each inscription or group of inscriptions the information received regarding it from Major DEANE, but have reserved further details regarding the position of the find-spots for the succeeding remarks. In each case it has been shown whether the stone itself or only an impression has been received. For purposes of subsequent reference I have given in brackets the numbers which the inscriptions bear in the Museum Catalogue or in my own list of impressions. The plates accompanying this paper show the inscriptions reduced, according to a simple scale, to one-half, one-fourth or one-eighth of the original. The actual size of the characters and of the written surface of a stone can thus be ascertained with ease and accuracy.

In the case of all stones deposited in the Museum and in that of a number of impressions, the reproductions given in the plates have been prepared from photographs which my friend Mr. F. H. ANDREWS, Principal of the Mayo School of Art and Curator of the Lahore Museum, has most kindly placed at my disposal. For the help thus rendered I wish to record here my sincere obligation.

M. SENART's remarks, *l.c.* pp. 13 sqq., have already made clear the serious difficulty which is caused by the impossibility of determining in most cases the position intended for the inscription, *i.e.*, what is to be considered as its top or foot. For a few inscriptions (Nos. 39, 40, 43, 53) Major DEANE has indicated the original position, and this point has accordingly been noted in the list. For the great mass of the stones and impressions, however, no direct evidence of this kind is available. I have accordingly been obliged to follow M. SENART's example and to arrange the reproductions on the plates either with reference to certain peculiarities in the shape of the stones which suggested a particular position, or by the still less safe guidance of the direction of writing which the characters themselves seemed to me to exhibit. As I have as little as my learned predecessor succeeded in finding conclusive evidence for any inscription as to the direction in which the characters are to be read, it is scarcely necessary to point out that the position in which all these inscriptions are shown on the plates, is purely conjectural.

The list of the inscriptions is as follows:—

1. Stone, obtained from *Spankharra*.[3] (Mus. 64; scale of reproduction, one-half of original).

2. Stone, found in mound at *Khalil Banda* (near Toru, Yusufzai). (Mus. 37; scale one-half).

3–19. Impressions on cloth "of small stones found buried together near an old Buddhist wall and at the foot of a cliff. The place is near *Darwazgai* and about a mile S. S. E. from *Spankharra*." "These little stones were buried in a small receptacle at the foot of the cliff and covered over with another stone." Nos. 5 and 6 inscribed on two sides of the same stone. (Nos. xxi.–xxxvii.; scale one-half).

20. Impression of a stone "in possession of a Sheikh at *Spankharra*. It is not known where it was originally found. Used by him for baking his food on." (No. xx.; scale one-half).

21–23. Impressions on cloth of 3 small stones sent to Lahore Museum in August 1896. The characters resemble those on impressions 3–19. [A subsequent note by Major Deane informs me that these stones form part of the *Darwazgai* find, but were obtained since the first lot of impressions, *i.e.*, Nos. 3–19.] (Nos. xli.–xliii.; scale one-half).

24. Stone "from the hill above *Elai*, Boner; (no ruin near)." (Mus. 65; scale one-half).

25. Stone "buried in the soil near an old spring at *Elai*, Boner." (Mus. 63; scale one-half).

26. Impression on paper of an inscription at *Tangi*, near *Miangam* village, on Ilm, Boner."

(No. i.; scale one-half).

27. Impression on cloth "of an inscription on a stone in the wall of the house of a Mulla, *Torsak* in Boner. It is said to have been taken originally from some old ruins with other stones for building purposes." (No. v.; scale one-half).

28. Impression on cloth "of a few letters inscribed on a stone lying in the jungle in the *Malandri* Valley which is the continuation of the Sudhum Valley towards the Boner Hills and Malandri Pass." (No. vi.; scale one-half).

[28*b*. Impression on paper (No. xix*b*.) "of an inscription on a stone lying near the village of *Padshah* in Boner, broken in half," is too

[3] I have followed throughout in local names the spelling of Major Deane's notes, and have not attempted to transcribe them according to the Society's system, as their actual pronunciation is unknown to me.

indistinct to be reproduced. The few characters of which traces are visible, resemble those of Nos. 26, 28 above.]

29. Impression on paper "of a stone at *Ilm-o-Mianz* in Boner, near Padshah and Bichounai on Ilm. It was at one time built into the walls of a Masjid and removed as unfit to be in a Masjid wall. It is still lying in the Masjid in the Miangam village, too large to be moved."

(No. iii.; scale one-eighth.)

30. Impression on paper of "broken bit of stone lying near the other at *Ilm-o-Mianz*, Boner."

(No. ii.; scale one-fourth.)

31. Impression on cloth of inscription "found near *Shahbazgarhi*." Stone sent to Lahore Museum.

(No. xxxix.; scale one-half.)

32-34. Impressions on cloth of inscriptions "lying close to the village of *Chargam* in *Puran*, a country above Boner. They were found bound together, one on the top of the other. Ruins exist near where they were found, but nothing is known as to where they originally came from." In a note dated 13th April, 1896, Major DEANE adds: "The three inscriptions are on separate slabs, and the three of them had been fastened together with hasps in order evidently to remove them. As the fastening had been made by the stones having been bored through, I can only conjecture that they were put together by the original inhabitants of the country and they must have lain a long time in the place where they were found."

(Nos. xvii., xviii., xix.; scales one-eighth, one-fourth and one-half, respectively. Impression No. 32 being of exceptional length had to be shown on the plate divided into two portions. A part of the central piece of the impression, measuring $2\frac{3}{8}$ inches on plate, has been reproduced both in the left and right portions.)

35. Impression on paper of inscription found in "the valley leading up from Surkhavi to *Surah* in Chamla. It was found about 5 miles from Surkhavi and $1\frac{1}{2}$ miles from *Surah*."

(No. xxxviii.; scale one-fourth.)

36. Impressions on cloth of two sides of stone "found at *Shera* in Amazai territory."

(No. xl.; sent to Lahore Museum; scale one-half.)

37. Stone "found in *Asgram*."

(Mus. 60; scale one-half.)

38. Stone "found lying amongst ruins at *Asgram*."

(Mus. 62; scale one-half.)

39. Stone "from *Palosdarra*; in situ, round edge uppermost."

(Mus. 69; scale one-fourth. Reproduced in woodcut by M. Senart, p. 25.)

40. Stone "from *Palosdarra*; found in situ."

(Mus. 66; scale one-fourth.)

41. Stone "from *Palosdarra*."

(Mus. 83; scale one-fourth.)

42. Stone "from *Palosdarra*."

(Mus. 84; scale one-fourth.)

43. Stone "from *Suludheri*; in situ, standing on end, thin end top."

(Mus. 68; scale one-fourth.)

44. Stone "from *Khudukhel* territory."

(Mus. 82; scale one-fourth.)

45. Stone "from an old wall at *Sarpatti*, a spur of Mahaban overlooking Chamla."

(Mus. 61; scale one-fourth.)

46. Stone "from *Kaldarra*, near Dargai."

(Mus. 77; scale one-fourth.)

47. Stone "found at *Zangi Khan Banda*, Boner. Had been removed from ruin and built into wall of Masjid. Came probably from site of Nos. 48-50."

(Mus. 70; scale one-fourth.)

48-50. Stones "dug up from what appears to be an old Memorial Stūpa completely buried in the ground at *Bughdarra* which is the ravine near *Zangi Khan Banda* in Boner."

(Mus. 79-81; scale of No. 48 one-fourth, of Nos. 49 and 50 one-half.)

51. Stone "from *Khrappa*, Panjpao, Boner."

(Mus. 67; thin piece of slatey stone with characters on both sides; scale one-fourth.)

52. Impression on paper of inscription "from rock on hill above *Odigram*, Swat."

(No. vii.; scale one-fourth.)

53. Impression on paper "from rock near *Odigram*, Upper Swat."

(No. ix.; scale one-fourth.)

54. Impression on paper "taken from a stone lying near *Kanai*, Ilaqa *Kana*, near *Ghorband* between Swat and the Indus."

(No. viii.; scale one-fourth.)

55–60. Impressions on cloth of Sgraffitti "on rocks found close together on the banks of the *Swat* river, just above *Ramora* Fort on the right bank and at the boundary of the Adinzai Valley."

(Nos. xi.–xvi.; scale one-eighth.)

M. Senart had already clearly recognized the fact that the inscriptions before him showed at least three distinct types of writing, each of which, on examining the find-spots of the inscriptions exhibiting it, could be connected with a well-defined locality or territorial division. These types which he accordingly distinguished under the very appropriate name of *Spankharra*, *Boner* and *Mahaban*, are all largely represented among the new inscriptions. It is a fresh proof of M. Senart's well-known penetration and sagacity as an epigraphist that the local distribution of the new inscriptions entirely supports his grouping.

This fact is most convincingly illustrated in the case of M. Senart's first group, that of *Spankharra*. Though M. Senart had only a single small inscription—probably a fragment—to place under this head, he did not fail to realize that its characters, both in form and execution, differ considerably from those met with in the other two classes. Their curiously irregular scrawly lines made M. Senart compare them rightly enough to mere Sgraffitti. These we now find reappearing on not less than twenty-three specimens which all, with one doubtful exception, come from the same locality or its immediate vicinity. *Spankharra* lies in Ranizai territory just beyond the northernmost point of the Hashtnagar Tahṣil, circ. 71° 42′ E. Long. 34° 27′ N. Lat. according to the Revenue Survey Map of the Peshawar District.[3]

No. 1 is a fragment resembling closely M. Senart's No. 1. More interesting is the collection of small stones Nos. 3–19, 21–23 which were found packed together "in a small receptacle at the foot of a cliff" near *Darwazgai*, about a mile from *Spankharra*. It would be of little use in the absence of an accurate description of the spot to make conjectures as to the purpose of this peculiar deposit. But it deserves to be noted that all the little stones show different groups of characters, some so curiously twisted and cursive as to suggest monograms or signatures. Some stones, in particular Nos. 18, 19, seem to contain also a few characters resembling those found on the inscriptions of the second (Boner) and third (Mahaban) classes. But from the majority of the characters and the general appearance of the writing it is evident that none of the stones can be specially connected with either of these

[3] "*District Peshawar*"; scale 1 inch to 4 miles; photozincographed at the Survey of India Offices, Calcutta, 1884. This map shows the "independent" territory immediately to the north of the Peshawar District with more detail than the corresponding sheet of the Atlas of India or other maps at present accessible to the public. As the topography of the hill tracts beyond the border is (apart from peaks fixed trigonometrically) not shown on the basis of any regular survey, the geographical positions indicated above for localities in that territory cannot be accurate. They are intended merely to facilitate identification on the map named.

classes. The same remark applies to No. 20, the "Sheikh's baking stone" which is the largest specimen of this type of writing and also exhibits a closer approach to regular lines.

Regarding No. 2, the only piece showing the characters of the Spankharra type, which was not actually obtained from that locality, Major DEANE believes that it may have been carried to *Banda Khalil* (a small hamlet south of Hoti-Mardan in Yusufzai) by a *Ṭālib*, it having been a Ṭālib from whom he got it.

The second type which M. SENART designated as that of *Boner*, was represented in his collection by four inscriptions all found near the village of *Bichounai* on the southern slopes of Mount Ilm, which divides Boner and Swat. M. SENART has already called attention, *l. c.*, p. 17, to the relatively large number of complicated and elaborate characters found in this group. This peculiarity induced him to separate it from the third, notwithstanding the common occurrence of certain simpler signs in both of them.

That this distinction was justified, is now shown by the new inscriptions gathered from the same region, Nos. 24–33. They all show a great variety of signs of a peculiarly elaborate type, either identical with or similar to the characters found on the Bichounai inscriptions.

As the find-spots of the new inscriptions are situated with one exception within the territory known as Boner, the designation given to this group by M. SENART has proved singularly felicitous. At the same time we can see from a glance at the map that the localities which have furnished these inscriptions, are spread over a considerable tract of country.

Nos. 24 and 25 come from *Elai* situated in the central part of Boner, circ. 72° 28′ E. Long., 34° 32′ N. Lat. No. 26 is a somewhat indistinct impression of a stone found near *Miangam*, a village on Ilm and hence probably not far from Bichounai. *Ilm* itself is shown on the 'Atlas of India' Sheet No. 14, as the name of the mountain range whose highest point is Peak No. 81 (9,341 feet) as marked by the Trigonometrical Survey. *Torsak*, where the original of No. 27 is said to be walled into a house, is a place about 3 miles due west of *Elai*.

Ilm-o-Mianz, where Nos. 29 and 30 come from, is a village which according to Major DEANE's information is situated somewhere on the southern slopes of Mount Ilm and near to Bichounai and Padshah. From the latter place was obtained the impression No. 28*b*. Still further to the north lies apparently *Chargam*, in Puran, which has furnished the interesting inscriptions Nos. 32–34.

To the south we are taken again by the small inscription No. 28 which was picked up in the *Malandri* Valley leading up from Rustam

and Surkhabi to the Malandri Pass, circ. 72°26′ E. long., 34° 24′ N. Lat.* Finally we have in No. 31, a small stone recently found at *Shahbazgarhi* far to the south of the Boner hills.

Some significance may, perhaps, be attached to the fact that this group of inscriptions which seems topographically to extend over the widest area, is also the one in which varieties of the same system of writing can be most readily distinguished.

In their clearest and sharpest form the characters appear in the four inscriptions from *Bichounai* (M. Senart's Nos. 2–5) which look as if engraved by the same mason or after an identical pattern. Closest to them range in this respect our Nos. 26-27 from *Tangi* and *Torsak*, though here the characters bear a slightly more rounded form. Similar in type are also Nos. 24-25 from *Elai*, but the execution is far less careful. Both these little inscriptions are cut into rough stones of small size which do not appear to have ever belonged to a building or other structure.

With a peculiarly cursive yet clear enough form of these characters we meet on the three inscriptions from *Chargam*, Nos. 32–34, which, as Major Deane's note seems to show, were originally fastened together. No. 34 contains only a few stray signs which, however, can be traced also in the far more regular lines of the other two inscriptions.

Nos. 28 and 31 from *Malandri* and *Shahbazgarhi*, respectively, are too small to show any striking peculiarity of their own. Such, however, is amply displayed by the large-sized characters of No. 29 from *Ilm-o-Mianz*. I should have hesitated to class this inscription with the Boner group, were it not that on closer examination the peculiarity of these characters appears to be due more to a kind of ornamentation with hooks and flourishes than to any real difference of type. The fragment No. 30 from the same locality can certainly not be separated from this group, the shape of the few signs approaching closely to some found on No. 24.

With the Boner group too, I have thought it best to arrange Nos. 35 and 36 which come both from valleys lying to the north of the Mahaban range and opening into Boner proper. No. 35 found near *Surah*, circ. 72° 36′ E. Long., 34° 24′ N. Lat., shows a few characters resembling the Boner type, arranged in a circle amidst what are evidently symbols. A similar arrangement is exhibited by M. Senart's No. 4 from Bichounai.

No. 36 which comes from *Shera*, a locality of uncertain position in Amazai territory, is a small loose stone showing on both sides scrawls which may be compared with a few signs occurring on No. 30 and elsewhere.

I cannot conclude this brief notice of the inscriptions of the Boner group without pointing out that this is the only one in which inscriptions of an approximately monumental look have yet been met with. The inscriptions of the first or Spankharra group are scarcely more than Sgraffitti on small stones which show no mark of having been specially prepared for bearing records. The inscriptions of the third group to be noticed next are also without exception engraved on stones of comparatively small size which, whether found detached or fitted into walls, are equally irregular in their shape. Against this, we find in the Boner group several inscriptions of greater size, like M. SENART's No. 5 and our Nos. 27, 29, 30 which are engraved in regular lines and evidently with far more care and routine than those referred to.

The new inscriptions of the third or *Mahaban* group, Nos. 37–41, come almost all from the identical localities from which M. SENART's specimens were procured. *Asgram* lies at the end of a spur which runs down from Mount Mahaban to the south, at a point circ. 72° 45′ E. Long., 34° 7′ N. Lat. *Palosdarra* according to Major DEANE's note seems to be situated about 72° 35′ E. Long., 34° 9′ N. Lat. close to the village Boka marked on the map near the Border towards Khudukhel territory. *Suludheri* seems to be about 3 to 4 miles to the north of Boka. The Khudukhel territory begins immediately to the west and north of Suludheri. *Sarpatti* is the name of a spur running to the north-west of Mahaban; its highest point is marked on the map at 72° 40′ E. Long., 34° 21′ N. Lat.

Whereas the find-spots of all the other inscriptions of this group are closely gathered round the spurs of Mount Mahaban, No. 46 which comes from *Kalarra* near Dargai takes us far away to the west into the vicinity of the Malakand Pass.

Regarding the characters which appear on these stones in such bewildering variety I have nothing to add to M. SENART's remarks, p. 21 *sqq.* No. 41 is of some interest as a socket cut into the stone, evidently with the intention of fitting it to another, makes it probable that the original position of the stone was the one shown in the plate. At the same time it appears that the inscription was engraved *after* the stone had been fitted in the above manner, as none of the characters falling near the cut edges seem to be mutilated. If a conclusion can be drawn from the fact that in the three outer lines which follow the rounded contour of the stone, the terminal signs below are cut up to the very edge of the socket, a direction of the writing from right to left would appear probable.

Perhaps the most curious of the new inscriptions in unknown characters are the five stones Nos. 47–51, which come from *Zangi Khan*

Banda and *Khrappa* in Boner. The characters which they exhibit, differ so strikingly in form and arrangement from those found on any of the inscriptions hitherto mentioned, that I cannot hesitate to recognize in them a fourth independent type. As both Zangi Khan Banda and Khrappa fall within the tract occupied by the clan of the *Nurizai*, I should suggest provisionally for these inscriptions the name of Nurizai group. The first named locality from which four of the stones have been obtained, lies according to the map close to the range of the hills which forms the southern boundary of Boner towards British territory, circ. 72° 25′ E. Long., 34° 26′ N. Lat. *Khrappa* is marked as *Krapa* on the map, some 7 miles in a direct line to the north-west of Zangi Khan Banda and not far from Ehi.

The inscriptions of the new group are already outwardly distinguished from the rest by the peculiar shape of the stones on which they are engraved. These are all longish pieces of a slatey material which as the dowel on No. 47 and the socket on No. 48 show, were evidently intended to be placed upright, i.e. with one of the narrower sides topmost. Another distinguishing feature is the engraved frame of straight lines which encloses all inscriptions except No. 49. On the reverse of No. 51 and in part of No. 47 the characters are actually attached to these lines.

The characters themselves which seem to consist of a series of curves, angles and simple strokes either separate or combined, do not show (except perhaps in part of No. 47), any approach to a linear arrangement such as we have found in the inscriptions of the other groups. If the information recorded regarding Nos. 48–50 is correct in describing their find-spots as a buried Stūpa, we could have little doubt as to the votive character of these small monuments which is suggested already by their shape.

The only reason for grouping together in the list and plates the series of impressions shown in Nos. 52–60, is that the stones from which they were taken are all situated in *Swat* territory or in its immediate vicinity. Leaving aside Nos. 55–60 in which some marks are perhaps mere symbols, we find that the characters of the other three inscriptions differ markedly from those found in the four groups above described, without yet showing any distinct affinity amongst themselves. No. 52 comes, perhaps, nearest to the type of the Mahaban group, but exhibits yet peculiarities which make it inadvisable for the present to range it under that head. In No. 53 again, which like the last-named inscription is engraved on a rock near *Odigram* (some ten miles north-east of Thana on the Swat river), we have characters of a peculiar rounded shape which bear no resemblance whatever to those of the third group.

No. 54 comes from the vicinity of *Ghorband* which is described by Major Deane as a "range of hills running parallel with the Indus for a short distance and northward or possibly a little N. W. from the Ilm and Dossira mountains." A few of the simple characters shown by this inscription occur also in the Mahaban group. Others, however, in particular the compounded (?) signs in the first two lines which are attached to horizontal strokes, I have not been able to trace in the large number of inscriptions we already possess of that type.

Until a larger number of inscriptions is obtained from that region, it must be left undecided whether we have in Nos. 52–54 fresh types of writing or only marked local variations of one or the other known group, such as M. Senart has very appropriately suggested (p. 18 note) in the case of Nos. 25 and 26 of his series.

The impressions reproduced in Nos. 55–60 exhibit a series of large Sgraffitti which are found engraved on rocks situated close together at a point on the upper course of the Swat river. Most frequent among them are signs which seem nothing but variations of the Triçūla symbol. In the largest of these 'inscriptions' No. 55, and also in No. 56 there appear a few signs which faintly resemble Devanāgarī or Çāradā letters. On the whole, however, it is improbable that we have in these detached markings anything more than emblematic signs or possibly ideograms of an unknown system.[4]

Large as the number of inscriptions is, which has rewarded Major Deane's search during the last two years, we look yet in vain among them for one which would furnish a clue to the puzzling characters they display in so bewildering variety. The new inscriptions exhibit as little as those contained in M. Senart's publication any well-defined groups of characters which by their repeated occurrence in particular positions might allow of some conclusion as to their significance or the character of their language.

There are not wanting in the new inscriptions stray signs which show a curious resemblance to the characters of one or the other known alphabets. But after what M. Senart and Prof. Bühler have said on this point, it is scarcely necessary to emphasize how hazardous it would be to take the mere resemblance of a few characters, unsupported by other evidence, as the basis for further speculations.

In view of these circumstances it appeared as if we should have to wait with resignation for the discovery of a bilingual stone or some other lucky accident of this kind, before we could approach even the preliminary question of the origin and date of these puzzling monu-

[4] [For further information regarding the position of these rock-carvings and the manner of their reproduction compare the "Supplementary Notes," p. 17 below.]

ments. All the more gratified we must feel at the recent discovery of a document which has thrown unexpected light on an obscure period of the history of Gandhāra and the neighbouring regions, and which also seems to show us the direction where the means for the future solution of the riddle may have to be sought for.

I refer to the Itinerary of the Chinese pilgrim *Ou-K'ong*, of which Professors LÉVI and CHAVANNES have published a translation, accompanied by very valuable notes, in the *Journal asiatique*, for September-October, 1895. From Ou-K'ong's account we learn that the territories of Udyāna and Gandhāra from which our inscriptions come, were during the pilgrim's sojourn there, A.D. 753–759, 763-764, united under the rule of a dynasty which claimed descent from Kaniṣka and was zealously attached to the Buddhist faith. Messrs. LÉVI and CHAVANNES rightly recognize in these rulers Albērūnī's 'Shāhiyas of Kābul,' 'Turks who were said to be of Tibetan origin.'[5] From the names given to members of this royal family both in Ou-K'ong's Itinerary and the T'ang Annals the Editors conclude with great probability, that these princes belonged actually to a dynasty of Turkish nationality and language.[6]

The interesting historical fact thus established fully justifies the Editors in attaching importance to the curious similarity which M. SENART and Prof. BÜHLER had already noticed between certain characters in Major DEANE'S inscriptions and the alphabet of the Turkish inscriptions from the banks of the Orkhon deciphered by Prof. V. THOMSEN in 1893.[7] This resemblance deserves all the more attention in view of the fact that the date of these Turkish inscriptions (first

[5] See Albērūnī's *India*, translated by Prof. Sachau, ii., pp. 10 sqq. Compare regarding this dynasty my paper *Zur Geschichte der Çāhis von Kābul* in 'Festgruss an Rudolf von Roth,' 1893, pp. 195 sqq.

[6] See *Journal asiatique*, 1895, vi., p. 378 sq.

It must be noted that the titles *t'e-le* and *t'e-k'in-li* which are most characteristically Turkish, are given in Ou-K'ong's narrative not as those of princes belonging to the ruling family of *K'ien-t'o-lo* (Gandhāra), but as designations of 'sons of the king of the *Tou-kiue* or Turks;' see *l. c.*, pp. 354, 357. Though mentioned as founders of Vihāras, both in Kaçmīr and Gandhāra, these princes need not have actually resided in either of these countries. Sufficient evidence, however, remains for the above assumption in the name of *Ou-san Te-le-li*, mentioned as king of Ki-pin in the Chinese Annals, A.D. 739; in the word *houli* which is found in the names of several Vihāras visited by Ou-K'ong in Gandhāra, and which seems to be a Turkish term, and finally in the name of the ambassador *Sa-po-ta-kan* whom the ruler of Gandhāra sent to the Chinese court in Ou-K'ong's time.

[7] According to Prof. BÜHLER'S observation, '*On the origin of the Brāhmī Alphabet*,' 1895, p. 89, the alphabets of the Orkhon and Yenissei inscriptions show more than a dozen of the signs found in Major DEANE'S inscriptions.

half of the 8th century), as already noted by Messrs. LÉVI and CHAVANNES, falls close to the time of Ou-K'ong's residence in the monasteries of Gandhāra and Udyāna.

These coincidences have led the Editors of Ou-K'ong's Itinerary to suggest a Turkish origin for our inscriptions. They are certainly striking enough to make it most desirable that the unknown characters of the latter should be fully analysed and compared with the Orkhon texts by a competent Turkish scholar. Unable to undertake even the preliminary steps for such a task, I must content myself here with showing that the conclusions drawn by Messrs. LÉVI and CHAVANNES from Ou-K'ong as to the existence of a Turkish dominion in Gandhāra, are well supported also by what Hiuen Tsiang had recorded of those regions more than a century earlier.

From Ou-K'ong's reference to Gandhāra as the site of 'the eastern capital of *Ki-pin*' (p. 349), it is certain that in his time as in that of the earlier Chinese pilgrim, Gandhāra was under the same rule as the Upper Valley of the Kābul River.[8] Hiuen Tsiang tells us distinctly (*Si-yu-ki*, transl. Beal, i., p. 98) that the Gandhāra of his time 'was governed by deputies from *Kia-pi-shi*.' Accordingly we find that when the pilgrim on his return-journey crossed the Indus near *Udabhāṇḍa*, the old capital of Gandhāra at the site of the present *Und*, he was received there by the king of *Kia-pi-shi*; compare *Life of Hiuen Tsiang*, translated by Beal, p. 192.

Kia-pi-shi or Kapiça is undoubtedly the Καπίσα of Ptolemy and identical with the hill-region between Kābul and the southern foot of the Hindukush. In describing its inhabitants Hiuen Tsiang tells us that 'their literature is like that of the Tukhāra (*Tu-ho-lo*) country, but the customs, common language and rules of behaviour are somewhat different' (*Si-yu-ki*, i., p. 54).

Retracing then our steps in the pilgrim's narrative to the country of the *Tu-ho-lo*, i.e., Tukhāristan on the Upper Oxus, we find the numerous petty states constituting it described as all dependent on the *Tuh-kiue* tribes, i.e., the Turks (see *Si-yu-ki*, i., p. 37 sq.). The language of the inhabitants is said to "differ somewhat from that of other countries. The number of radical letters in their language is twenty-five; by combining these, they express all objects around them. Their writing is across the page, and they read from left to right. Their literary records have increased gradually."

[8] From the Chinese notices regarding *Ki-pin*, lucidly set forth by Messrs. LÉVI and CHAVANNES, *l.c.*, pp. 371 sqq., it appears that *Ki-pin* as a geographical term in Chinese texts has had a varying employ at different periods. On the whole, however, preponderating evidence points to Ki-pin having been originally the designation of the Upper Kābul Valley.

Meagre as these details are they show yet clearly that in searching for the national and literary affinities of the race which held the rule of Kia-pi-shi and Gandhāra in Hiuen Tsiang's time, we have to look to the Turkish tribes in the north and not in the direction of India. A century later Udyāna too had passed under the same dominion. Whereas Hiuen Tsiang speaks yet of independent kings in Udyāna (U-ch[illegible]ng-na, *Si-yu-ki*, i., p. 121), we see from a passage of the T'ang Annals (*L'Itinéraire d'Ou-K'ong*, p. 349 note) that A.D. 745 this territory was already united with Gandhāra and Kia-pi-shi under the same rule. In that year P'o-p'o, king of Ki-pin, is said to have received the imperial authority for assuming the title of 'King of *Ki-pin* and *Ou-chang*.'

This historical fact would allow us to account for the occurrence of Turkish inscriptions in regions like Swat and Boner which undoubtedly belonged to Udyāna, notwithstanding the record which Hiuen Tsiang has left us as to the connection of the language and writing of Udyāna with that of India.[9]

The publications of the Danish Academy and the Finno-Ugrian Society, containing the Orkhon inscriptions, are to my regret not accessible to me at present. I am, therefore, unable to ascertain with which of the several types of writing distinguished above their characters show most affinity.

Perhaps, a comparison of the Orkhon inscriptions will also throw some light on the relation of these types amongst each other. The first three as well as the fifth have undoubtedly numerous simple characters in common and might represent modifications of one and the same system of writing adapted to different languages or dialects. It is, however, evident that other explanations are also possible, and that all conjectures on the subject must for the present remain extremely hazardous.

Camp, Kashmir: 19th September, 1896.

9 "Their language though different in some points, yet greatly resembles that of India. Their written characters and their rules of etiquette are also of a mixed character as before." See *Si-yu-ki*, i. p., 120.

The local names of Swat and Boner, as far as shown on the map, with their frequent terminations in *-grām* and *-kōt*, seem to support the belief that these regions were at a time preceding the Paṭhān conquest inhabited by a population which in its great mass spoke an Indian language. This circumstance, however, could well be reconciled with a prolonged dominion over those territories of Turkish masters or even their temporary occupation by a Turkish-speaking population.

Without going for analogies to Europe where, *e.g.*, the Balkan Peninsula would furnish them in plenty, we may refer to the local nomenclature of the Upper Derajāt along the right Indus bank and to that of Yusufzai-Gandhāra itself. This has preserved its Indian character notwithstanding the fact that the great mass of the population in these tracts has for centuries back been speaking Puṣthu.

SUPPLEMENTARY NOTES.

More than a year has passed between the time when this paper was first sent to the press, and the date of its publication. This long delay has been due solely to the difficulty first experienced in providing for the adequate reproduction of the inscriptions. On reference to the only Indian establishment capable of undertaking such work it was found that the required plates could not be prepared there except at a cost which would have considerably exceeded the funds available for this purpose. Even then it seemed doubtful whether the process to be employed would secure satisfactory reproductions of those impressions on paper or cloth which were faint in color or otherwise difficult to reproduce mechanically.

In view of these circumstances, it was particularly gratifying that Mr. W. Griggs, of Peckham, London, whose photographic and chromolithographic works have already on many occasions served the interests of Indian archæological and epigraphical research, kindly offered to undertake the task on terms acceptable to the Society's Council. A visit paid to England during the last summer enabled me to watch personally the preparation of the plates. I was thus in a position to appreciate more thoroughly the exceptional care and attention which Mr. Griggs has bestowed on the work. The difficulties resulting from the deficient nature of part of the available materials could not have been overcome so successfully without Mr. Griggs' personal efforts, and for these my special thanks are due to him.

For the technical defects in many of the available impressions it is easy to account in the light of the explanations with which Major Deane has favoured me on a subsequent occasion. The persons through whose hands almost all these impressions have been obtained were wandering Paṭhān Mullās and Ṭālibs. Individuals of this class, being aware of Major Deane's interest in epigraphical remains, had for some time back been in the habit of bringing to him any inscribed stones which they came across and could conveniently carry along. Some of them on their wanderings across the border had seen similar stones which either on account of their size or for other reasons could not easily be removed.

Fanaticism among transfrontier tribes, like those of Boner and the Utman Khel, is still strong enough to make the open removal of inscribed stones which may be suspected to be of a 'Kāfir' origin and to give

eventually information as to hidden treasures, etc., a business of considerable risk even for such people. Major DEANE, therefore, thought it best to initiate his occasional visitors into the art of taking impressions on paper or cloth and to provide them with the necessary materials in order to secure through them impressions of stones not otherwise obtainable. Some of them incited by the hope of a small remuneration have actually carried out Major DEANE's wishes, and the impressions now published (together with a considerable number of others subsequently received) represent the result of their efforts.

It would in no case be reasonable to expect from agents of this peculiar type such work as we are accustomed to from trained assistants of archæogical surveyors in other parts of India. But indeed the awkward conditions under which generally these impressions have to be secured, would render the taking of really good impressions impossible even if Mullās and Ṭālibs could be got to learn systematically all the niceties of the art. In order to avoid detection and the consequent risks, Major DEANE's agents have been obliged to take their impressions in the manner which is easiest and quickest. The orthodox method of taking an impression from the stone by means of wetted paper and with the use of brush and ink, would no doubt have given far better results. Yet by following this lengthy process the operator might more than once have exposed himself to the chance of being shot at by a suspicious tribesman while he watched his paper drying. In two or three cases Major Deane's agents have in fact been fired at even while using the quicker process.

It is therefore scarcely surprising to find that Major DEANE's agents have in most cases contented themselves with a simpler if less effective process. After roughly inking the raised surface of the stone a piece of cloth or paper was pressed against it. On this the inscribed parts ought to appear in white. In some instances (see, *e.g.*, Nos. 27, 33) very fair impressions were thus obtained. In others, however, the evident hurry with which the stone was inked or the cloth (paper) removed, has led to the impression becoming blurred and accordingly very difficult to reproduce (see, *e.g.*, Nos. 30, 32). In those few cases where the operator tried to obtain a sunk paper-impression by the use of a brush (see Nos. 29, 35) his achievement has scarcely been more satisfactory.

A short visit which I had the good fortune to pay to the Lower Swat Valley last Christmas under Major DEANE's auspices, enabled me to examine personally the rock-carved inscriptions reproduced in Nos. 55-60 of Plate VII. These were the only ones among the inscriptions here published from impressions which were then accessible for inspection. I found the two rocks exhibiting them exactly in the posi-

tion indicated by the remarks quoted above, p. 6. They lie side by side at the foot of a hill-spur which runs down to the right bank of the Swat river, about three miles above Fort *Chakdarra* and quite close to the little hamlet of *Khushmaqām*. Between them and the precipitous river bank passes the road to *Shamozai* territory and Upper Swat, undoubtedly an important route of communication since ancient times. The face of both rocks is naturally smooth and thus seems to offer itself as a convenient place of record.

The large marks which appear on them bear distinctly the character of Sgraffitti. They are cut only to a very slight depth in the hard rock, and form small detached groups spreading irregularly over the surface. Some of these little groups are now almost completely effaced. The careless execution of the marks makes it impossible to obtain an impression of them by any ordinary mechanical process. The attempt I made to photograph them, also failed, partly owing to the faint appearance of the outlines and partly on account of the glare reflected from the rock. For the purpose of the present publication I was, therefore, obliged to fall back upon the impressions which Major Deane had originally communicated to me.

For these we are indebted to Surgeon-Captain Dr. D. W. Sutherland, who while stationed at Chakdarra in charge of the Swat Civil Hospital 1895-97, had devoted a great deal of attention to the antiquities of the neighourhood. Dr. Sutherland, finding it impracticable to secure an impression in any other fashion, had carefully inked by hand the whole surface around what appeared to him engraved marks, and had taken his cloth impressions from the thus prepared surface. As he had carried out this process with great care and skill, the impressions of the several groups of Sgraffitti prepared by him can be accepted as very accurate eye-copies of what can still be distinguished with any certainty. On Plate VII. I have shown the groups Nos. 55-57 approximately in the relative positions which they occupy on the rock to the right. The Sgraffitti visible on the left rock are reproduced in the same way in Nos. 58-60.

* * *

During the time which has passed since the above paper was written, Major Deane has continued with equal zeal and success the collection of epigraphical remains from the interesting regions which lie within the sphere of his influence. The number of inscriptions in unknown characters since secured by him, including those obtained during the recent expedition to Upper Swat, has gradually risen to above fifty. Among them is one coming from Boner which owing to the large num-

ber of characters it contains is likely to prove important for the eventual decipherment of these puzzling documents. Major DEANE's efforts have, however, not yet succeeded in bringing to light a single 'bilinguis,' and in the absence of such a guide the first step in that direction remains as difficult as before. The preparation of Plates showing Major DEANE's recent acquisitions has already being taken in hand by Mr. GRIGGS, and with the help of the Asiatic Society I hope to publish soon the whole of these new finds in a Second Series.

In conclusion I may be allowed to state that I have discussed the questions concerning the Turkish dominion in Gandhāra and Udyāna more fully in a paper recently read before the Royal Hungarian Academy of Sciences, Budapest [10]. This I hope to make soon more accessible by an English translation.

Lahore: 5th November, 1897.

[10] "*A fehér Hunok és rokon törzsek indiai szereplésérol* (White Huns and kindred tribes in Indian history"); see *Budapesti Szemle*, August, 1897.

A Note on the Antiquity of Chittagong, compiled from the Tibetan works Paysam Jon-Zaṅ of Sumpa Khan-po and Kāhbab Dun-dan of Lama Tārā Nātha.—*By* Sarat Chandra Das, C.I.E., *Rai Bahādur.*

[Read February, 1897.]

About the close of the 6th century A.D. when Çrī Harṣa reigned in Kaçmīr,[1] in the north, the brother of king Prabhāsa, named Çākyabala, brought under his sway the country between Haridvāra and Kaçmīr. He accepted as his spiritual teacher Ācārya Vasumitra, the author of the commentary of the Mahākōça and also of the works on the religious theories of the eighteen sects of the early Buddhists. In the south Dēva Çrama, a pupil of Dharma Rakṣita, who had written the *Mūla Prajñā Tīkā*, gained the victory in a disputation with some *Tīrthika* (Brāhmaṇa) Pandits, and succeeded in converting king Sālavāhana to Buddhism. Afterwards in the reign of the fifth Siṁha, the Tīrthika teacher called Dattatri appeared.[2] Shortly afterwards the Brāhmaṇa Pandits, called Kumāra-līla and Kaṇāda, defeated the pupils of the Buddhist sage Diṅ-nāga and others. When Çaṁkar-ācārya, who, it is said, could see

[1] དེ་ནས་ཉི་མའི་རིགས་སྡེ་པ་འཕེ་རྒྱ་པོ་བརྒྱ་བཞི་རིམ་པར་སྐྱབ་སྟེ། དེ་རྣམ་ཀ་ཆེར་ཤྲཱི་ཧཱ་ཤ་དེ་ཞེས་རྒྱལ་པོ་བྱོན་བསྲུངས་ནོ། (*Pagsam Jon-Zaṅ*, 110.)

Then the Pāla dynasty of the solar race (*Sūryavaṁça*) consisting of fourteen kings came in succession. At that time in Kaçmīr there ruled Çri Harṣa Dēva.

[2] (ལོང་ཀོ་ཤུ་པ་) རྣམ་རྒྱལ་མྱ་ངན་འདས་པའི་ཏོག་མེད་རྒྱས་བཤད་ལོག་ཅིང་ཐུབ་ཅན་ནམ་དང་ལྡོར་བཤུས་པ་ཐུ་རྩྭ་ཟད་གམས་དམའ་བ་སྟང་སྟེ། དེ་ཡང་ལང་ཀོ་ཤུ་པའ་རྣམ་རྒྱལ་དང་བྲྀ་ཧ་ས་ཏ་དེ་ཞེས་ཟེར་མཁའ་འདེད་རྣམས་ཀྱིས་ཤི་ཀཱ་ཤ་ཁྲ་ཅ་ཏྲ་ཞེས་ཐེག་དམན་ཤི་ཀཱ་ཤ་ཁྲ་ཅ་ཏྲ་ཞེས་བྱ་བ་ཡམ་ནས་ཀྱོས་ནས་ཐེ་ཚོམ་ཟ་བ་ཡོད་ཅིང་ཐུབ་ཅན་ནམ་དང་ལྡོར་བཤུས་པ་ཐུ་རྩྭ་ཟད་གམས་དམའ་བ་སྟང་ངོ། (*Pagsam Jon-Zaṅ*, 105.)

the god Mahādēva whenever he wished, came to Bengal, the elderly Buddhist Bhikṣus wished to call the demigods who guarded Buddhism in other lands to their aid, but the youthful Buddhist Pandits, not listening to their advice, held religious controversy with Çaṁkara and were defeated.[3] They lost twenty-five endowed religious institutions together with their furniture and other properties; and 500 Buddhist Upāsakas were converted to the creed of the Tīrthikas (Brāhmaṇas). When Çaṁkar-ācārya sent his letter of challenge to Nālanda to hold a religious disputation with him, Dharma Kīrtti[4] was brought from the Dekhan by king Prabhāsa. In the great controversy which was held at Benares between the Brāhmaṇas and the Buddhists in which the king presided, Pandit Dharma Kīrtti gained the victory. All the people interested in the controversy became converted to Buddhism. The king, having been converted, established a large number of Buddhist institutions. Though defeated, Çaṁkara did not embrace Buddhism. After his death which occurred by drowning himself in the Ganges, his followers were mostly converted to Buddhism.

In Ōṭivisa (Orissa) Çaṁkara's disciple, a Brāhman named Bhaṭṭācārya, became powerful. He defeated the Buddhist Pandit Kuliça Çrēṣṭha and others in disputation, with the result that the Buddhist temples were destroyed by the Tirthikas, and their endowed properties appropriated to the use of the latter. In the east Vimala Candra,[5] son of Bāla Candra, had established his power over

[3] དེཡི་ཚེ་ཀུ་ལྷན་དུ་སྟུ་ལོ་ཀ་ཤ་ཁྱུ་ཆ་ཅན་རྒོད་པ་ཐུབ་པའ་ ལཕྱིན་པཁྲངས་ཚེ་ ལའི་ཤིན་ལྷོ་ཕྱོགས་ ཤས་ཐུན་དངས་ཏེ་ཕྱག་པོ་ རབ་ཏུས་ཤེས་རྣ་ལྷ་རྣ་སེར་ཕྱེ་ ཤང་དང་ཐམ་རྩེ་མཁན་པ་ བྱུན་ལའོན་པའེ་དབྱས་ཁུ་བཙོད་ཚེ་ བྱུན་ཁམ་ལྟེ་ཤང་པར་ བཞུག་པས།

(*Pagsam Jon-Zañ*, 106.)

[4] ཆོས་ཁྲགས་དང་གོང་ཕྱི་སྐམ་པོ་རྒྱལ་མཉམ་རེར་ཀོ། (*Pagsam Jon-Zañ*, 107.)

Dharma Kīrtti and Gam-po king of Tibet were said to be of the same time.

Gam-po married the daughter of Emperor Thai Jung of China, who according to Chinese chronology reigned in 600 A.D.

(*Pagsam Jon-Zañ*, 107.)

[5] བང་ག་ལ་དང་སྤྱ་མ་རྟ་པ་དང་ཏི་རུ་ཆ་ཏི་ཤུམ་ལ་གྱ་ལ རྟན་རྒྱེ་བྱ་ཡི་མ་ལ་ རྟན་རྒྱ་མངའ་བཐུར་ཏེ་

(*Pagsam Jon-Zañ*, 105.)

Bāla Candra was the son of Siṁha Candra who reigned in Bengal. Bāla Candra extended his power to Tirhut and Kāmarūpa. At this time Magadha was ruled by the elder son of King Harṣa.

the three great provinces, *viz* :—Tirabhukti, Baṇgāla and Kāmarūpa. He patronized the *Mādhyamika* philosophers, Çrī Gupta, the pupil of Supradatta and also the Ācāryas Ratna Kīrtti and Amara Siddha. King Vimala Candra had married a sister of king Bhartṛhari, the last of the line of the Candras who ruled in Mālava, and had two sons, *viz* :—Lalita Candra and Gōpī Candra After king Bhartṛhari had renounced the world in order to live the life of an ascetic, Lalita Candra succeeded him. King Vimala Candra was succeeded by Gōpī Candra, during whose reign the seat of Government was at Cāṭigrāma (modern Chittagong) in Eastern Bengal. In Cāṭigrāma there were in that early time many *Tīrthika* temples and Buddhist Vihāras. The Buddhist of Cāṭigrāma belonged to the Tāntrik Mahāyāna school. To the south of Cāṭigrāma was the kingdom of Rakhan or Arakhan. In Cāṭigrāma there was Jālandhara, in which flames of fire appeared mixed up with water.

The Buddhist Siddha Bālapāda was born at Nagara Thata in Sindu, in the family of a rich Çūdra merchant. He became a Buddhist and studied a large number of Buddhist works under eminent Buddhist sages. Then entering the holy order of Bhikṣus, he visited Udyāna (modern Swat and Chitral) and there practised *yōga*. From there he proceeded to Jālandhara (a place somewhere between Kaçmīr and Nēpāl), where appeared flames of fire in the midst of water and stone. For his long residence there he was called the Saint of Jālandhara. He visited Nēpāl and there causing the chief *Liṅga* of Çiva to be split by the efficacy of his charms, converted the Nepalese to Tāntrik Buddhism. From Nēpāl he proceeded to the city of Avanti in Mālava. At this time Bhartṛhari, a member of the old royal family of Mālava, had succeeded to the throne on the death of Viṣṇu Rāja. Bālapāda converted a large number of people at Avanti to Buddhism by performing miracles. Once several thousand goats were being sacrificed by the Brāhmans before some deity. Suddenly by his charms he changed them into so many wolves. This frightened the people who, imbibing faith in Buddha, desisted from animal sacrifice. He initiated a man of the weaver-caste, aged 99 years, in the mystic cult of Tāntrik Buddhism and admitted a young Brāhman to the holy order, who afterwards became an adept in mysticism and was called Kriṣṇ-ācārya (the performer of black magic). Lastly, once while he was seated in deep meditation at the foot of a tree in a grove outside the city of Avanti, some robbers came and sat round him. At night they committed robbery in the city and obtained good many precious things. Thinking that good luck had attended them on account of their having seen the sage, they made him large presents of pearl rosaries and other precious things which weighed several hundred ounces. When they had gone away, the people saw in

his possession the stolen goods, and so they took him to the king, who sentenced him to be impaled. The sage was fixed to the stake, and there he remained still and motionless as in *yōga*. When necessary, he used to get away to make ablution in the river, and then again quietly resumed his seat on the stake. On the seventh day of his impalement the king came to inspect the scene. Seeing that the sage sat unhurt on the stake, he became unhappy for the wrong he had done to one who was guiltless and holy. He became a devout follower of Bālapāda, who was so called on account of his child-like simplicity of character.[6] From Mālava the sage proceeded to the kingdom of Bengal which was ruled by Gōpī Candra,[7] a son of king Vimala Candra. Gōpī Candra was young when he became king. Being a handsome person, he was very coquettish in his manners. He often used to behold his beautiful face in the mirror. The sage Bālapāda visited Jālandhara (probably the modern Sītākuṇḍa), where flames of fire were seen in the midst of water and stone. Coming to the city of Cāṭigrāma, he entered the king's orchard and sat meanly attired in meditation at the foot of some trees. It is said that when he felt thirsty, he summoned the cocoa-nuts that were on the tree to come to his lips. They came and, pouring into his mouth their watery contents, returned at his bidding to their respective places. The mother of the king observed this curious phenomenon with wonder, and knowing that the sage who looked mean like a Hāḍi (sweeper of roads) was a *Siddha*, she asked her royal son to call the sage to his presence to get some charms by which he might gain longevity. The sage whispered a *mantra* into the king's ears, and at the same time asked him to put his hand in an empty earthen pot. "Do you perceive anything in it?" asked the sage. "No, nothing" was the reply.

[6] བཅོམ་ལྡན་འདས་ཏཻལ་མ་ལ་ལྷའི་རྒྱལ་བསྟོད་ནོད་པ་བྱང་ཅི་ཙམ་ཡོད་ཀས་ང་མོ་ཞན་ཡོད་པ་མ་ལ་ཅན་ཏ་ལ་བཙན་མཐ་ཐེག་པ་ལ་ཀོ་པི་ཅན་ཏ་ཐུང་ཀས་

(*Pagsam Jon-Zaṅ*, 108.)

རྒྱལ་པོ་སྤྱང་ཅི་ཙམ་ནི་རྒྱལ་པོ་ཀོ་པི་ཅན་ཏའི་ཞང་པོ་ཡིན་ནོ་ (*Kāhbab Dun-dan*, 30.)

[7] ཤཐ་བྱང་ཁ་ལའི་རྒྱལ་པོ་ཀོ་པི་ཅནའི་ཡུལ་ན་

(*Pagsam Jon-Zaṅ*, 109.)

བྱང་ཁ་ལའི་ཚོ་ཏ་ཐམ་ཞེས་པའི་གོང་ཁྱེར་ཐུ་ཚན་པའི་ཀའི་པའེ་ཚུལ་བཟང་ཞིང་ཐོག་ཏུ་སྐྱེས་ཏེ། ཡུལ་དེའི་རྒྱལ་པོ་ཁཞོན་ཏུ་ཀོ་པི་ཅན་ཏ་ཞེས་བྱ་བ་རྒྱལ་གྱིད་ལ་འཁྲིད་ཅས་ཏིང་པོའ་ལོན་པ་ཞིག་ཏོད་པས། རང་ནི་ཁཐུཁས་མཛེས་པ་ལ་ཏོངས་ཤུ་ཆགས་ཏེ། མེ་ཏོང་ཁཐུ་ཞིང་ཐི་ཐུ་འཆོལ་པ་ལ་ (*Kāhbab Dun-dan*, 28.)

Thrice the same interrogation was made, to which the same reply was given. Then "that *tattva*, *i.e.*, the perception of *nothingness*, is the way to immortality," said the sage. The king did not perceive the truth, and suspecting the sage to be an imposter, ordered him to be buried alive. A pit was dug in the ground, into which the sage was placed. The ground was then covered with the dung of elephants and horses. It was then fenced with thorny trees, so that nobody could take him out. Twelve years after this event his pupil Kṛṣṇ-ācārya, when proceeding to the place called Kadalī Kṣētra, visited Cāṭigrāma. His two pupils Badala and Mahila at his instance shewed some miracles to the king, and impressed him with the extreme holiness of their teacher. Being likewise asked for the secrets of immortality by Gōpī Candra, Kṛṣṇ-ācārya whispered into his ears the same *mantra* which was given him by Bālapāda. The king, remembering it, said he had heard the same thing once before, and told the same story. Kṛṣṇ-ācārya informed the monarch that nobody else knew the *mantra* except his own *Guru*, *i.e.*, Bālapāda, the sage of Jālandhara whom he had buried alive. The king became penitent and greatly frightened. They both went over the grave and exhumed the sage. Being in a state of suspended animation in *yōga*, he was alive. He complained of extreme hunger and thirst, having had no food or drink for twelve years. When brought out, he rested his two arms on the heads of Kṛṣṇ-ācārya's pupils, named Dhama and Dhuma, and took some food. The king prayed for forgiveness, which was granted to him on condition that he renounced the world and adopted the life of an ascetic. After staying for six months in Cāṭigrāma in a cavern in the hills, he proceeded to Rāmēçvar-ārāma in the south of India.

Cāṭigrāma was an important city of Bengal in that early period. The country to the south of Tripura and north of Rakhan (Arakan) was Ramma (Sanskrit *ramya*), the land of the picturesque sceneries. It was the headquarters of Buddhism after the decline of Nālanda. In the city of Cāṭigrāma or Cāṭigāō there was a large Buddhist monastery called Paṇḍita-Vihāra. There the Buddhist Pandits used to hold religious controversies with the *Tīrthikas* (Brāhmaṇas.) Once when a disputation took place, the leader of the Buddhists, at the suggestion of an old woman, wore a cap pointed like a thorn, at the time of the controversy. He came out victorious.[8] To commemorate that

[8] དེ་རྗེས་ཁྱད་ཅ་ལའི་ཚེ་རོ་བྱ་བའ་ཐོང་ཆེར་ཕྱི་པཀ་ཏི་ཁ་ཁྱི་ཤ་ཤེས་པའི་ཀུན་ཏུ་ཁ་
ལ་ཁོང་ངུ་སྐུ་སྦེགས་པའི་རྩེལ་པ་ཞིག་བྱུང་བའི་ཚེ་རྒན་མོ་ཞིག་ཀ་ལ་ལན་རྒས་ཆེར་མ
ཐུ་བྱའོ་ཚོ་ཅན་ཐོ་ཁྱོད་ཀྱིས་རྒས་ཚོང་པས་ཐུལ་པ་ལས པཀ་ཁྱེ་ཚོ་ངོད་དང་ཟོ །

(*Pagsam Jon-Zañ*, 109.)

triumph, the Buddhists of Magadha kept up the use of the conical pointed cap. In Tibet it is called *Pan-shva* (*pan* 'Pandit' and *shva* in Tibetan 'a cap'), meaning 'the Pandit's cap.' The Lamas of Tibet, who belong to the Mahāyāna School of Magadha, use the pointed cap on al religious occasions. Marco Polo, the Venetian traveller, took a model of the *Pan-shva* from the grand Lama of Tibet who visited Peking at the invitation of the great Emperor Kublai Khān, and presented it to His Holiness the Pope.

About the middle of the 10th century the great Buddhist Tāntrik sage Tila-yōgī [9] was born in Cāṭigāõ. The hierarch of Magadha, Naratōpa, visited Cāṭigrāma and took vows from Tila-yōgī. Marpa Lochava, the founder of the red hat school of Tibet, was a pupil of Naratōpa, and Milarapa, the renowned *Siddha* (saint) of Tibet, was Marpa's pupil.

In 1200 A.D. Pandit Çākya Çrībhadra of Kaçmīr visited the great monasteries of Ōḍantapurī and Vikramaçilā. He witnessed the destruction of those Vihāras by the *Turuṣka* (Muḥammadan) army and the wholesale massacre of the monks. He fled to a place called Jagadhala in Ōṭivisa (Orissa), when further ravages were being done to Buddhism in Magadha by the Turuṣkas. Three years after, in 1203, he visited Tibet, and there introduced the system of initiative vow which is called *Panchan Domgyun*. Some of the Buddhist Paudits of Magadha fled towards Nēpāl, to the south-west and south, and also towards Arkhan [10] (Arakan), Muñad (Burmah), Kambōja (Cambodia) and other places. From the rise of the Sēna Dynasty to its downfall, when under the orders of Lawang Sēna (probably Lakṣmaṇa Sēna) some Buddhist Bhikṣus served as messengers, the country called Antara Vidēha was overrun by the Tirthikas, Mlēcchas and the Turuṣkas.

About this time some foolish Yōgīs, who were followers of the Buddhist Yōgī Gau-rakṣa, became Çivaite Saṁnyāsīs. There remained only

[9] སྒོམ་དཔོན་ཏི་ལི་པ་ནི། ཤར་རྒྱལ་ཅོ་ཧ་གཡོ་ཞེས་ཐ་གཅིག་ཏུ་ཁོང་ཚུར་བྱོན་ཞེས་བྱ་བ་སྐབས་རེའོ། རིགས་གྲུམ་སྐྱེས་ཏེ། (*Kāhbab Dun-dan*, 33.)

[10] ནང་ནས་དང་ལྡན་ཐམ་ཅའི་གཤ་ཐོ་ཨཱ་ཏི་ཤ་ཆེ་ཅུང་ཟད་ཀ་ལ་སོགས་ཐོ་ཁ་ཆེ་ཅུང་ཟད་ཀྱང་ཐུགས་གཅོངས་ཤ་དམག་མ་ཁ་དྲུང་ཕྱིན་ནས་ཡུལ་བཅོམ་ཞིང་ཨ་ཏི་ཤ་ཡི་དང་གི་ཐ་མ་རྣམ་ལ་ཐམས་རིང་རྒྱང་གཅིག་ཏུ་ཁོང་ཚུར་བྱོན་ཏེ་ཐམས་ཅུ་ནི་ཨ་ཏི་ཤ་ཡི་ཐ་ཁ་ཆེ་ཅུང་ཟད་ཀྱང་ཐུགས་གཅོངས་ཤ་དམག་ཕྱིན་ནས་ཡུལ་བཅོམ་ཞིང

a few Buddhists at Natasva. After that time the Rājas of the Sēna family became vassals of the *Turuṣka* kings. They acted according to the commands of the *Turuṣka* kings. They respected the Buddhist religion. Particularly in the time of Buddha Sēna, Rāhula Çrībhadra, Bhūmi Çrībhadra, Upāya Çrībhadra and others performed Buddhist religious service. They had a limited number of followers and devotees. There were at that time the *Ācāryas* Karuṇa Çrībhadra, and Munīndra Çrībhadra and others who also worked with a few followers. About a hundred years after the time of Pratīta Sēna,[11] Cagala Rāja, probably the most powerful king of Cāṭigāõ, rose to eminence in Bengal. His power was felt all over the country extending from Bengal to Delhi. He was devoted to Brāhmanism. His wife, being a Buddhist, induced him to repair some of the ruined Vihāras of Magadha and to perform religious service at Vajrāsana (Bōdhi Gayā) and Nālanda, and particularly to rebuild the upper storeys of the great nine storeyed *Gandhola* of Bōdhi Gayā. He re-established the worship of Buddha there by inviting a learned Pandit like Çāriputra. From the death of this Rāja (Cagala) up to this year (Earth-dragon year according to the chronology of Tibet) three hundred years have elapsed. Afterwards in Ōṭivisa (Orissa) Mukunda Dēva (Dharma Rāja), who favoured Buddhism, became powerful. His power extended up to Magadha. He too did some service to the cause of Buddhism. Since his death up to this time one hundred and seventy-eight years have passed.

Towards the East, Buddhism spread more and more than before. After the downfall of Magadha most of the learned sages went towards the land of the Kōkī. Since that time the Rājas Çōbhajāta, Simha-jaṭī and others established many Buddhist religious institutions in their dominions. The religion of Buddha having spread there, the Pandit Vana Ratna and others visited Tibet from there (Cāṭigāõ). In later

[11] ཕྱི་ཤ་ལེ་ན་འཕགས་ཤས་ཆོ་གཙུ་རྩོམ་ཤས་བྱང་ག་ཡུར་རྩོ་ཀ་ལ་རྒྱལ་ཁེལ་པ་དེ་ལྟོན་ཚད་ཐུ་ཅེན་རྒྱང་ཀུན་ལ་དབང་གསྐྱེར་གའི་ཡོངས་འཛིར་ཆེ་ཐ་རུན་ཁ་ཐམ་ཐེ་ལ་མོས་པ་ཞིག་ཐྲོད་བ་གཏོན་མོས་ཐྲོ་ཁ་ཅང་པར་གསྐྱེར་ཤས་རྣ་ཚུན་དང་ཀུ་ལེན་རྟར་མཆེད་རིང་སྐྱེར་ཐུ་ཁུ་ཁང་ཤམས་པ་འཁའ་ཞིག་དང་ཁྱད་པར་རྒྱ་ལ་དག་ཏུ་ཕེག་ཚེག་ཤ་ཡང་ཤལ་ཏེ་པཱ་ཏི་ཀ་ཀྱི་རྡོ་བ་འབྲས་དང་ཤས་ཆེས་ཤིག་ཚང་ཟད་བཏོན་ཏེ། བཙུ་པོ་དང་ཁྲོ་རྒྱ་དང་ཁྲོ་ཐྲོག་ས་དང་ཤར་ཡར་ཁང་དང་ཐུ་ཤུད་ཀམ་པོ་ཁ་ལ་ལོག་ཐུ་ཐྲོལ་ཤས་མ་ག་དྲུར་བསྒྲུབ་པ་རྒྱབ་པོ།

times Rāja Babla Sundara sent a number of Pandits to the Siddha Çānti Gupta, when he was residing in the country of Khagēndra in Dekhan. They returned with a large number of *Mantra* works to Cāṭigāō. His four sons, Candra Vāhana, Atīta Vāhana, Bāla Vāhana, and Sundara hachi, patronized Buddhism. The first reigned in Rakhan (Arakan), the second ruled in the land of the Cakmas (Chittagong Hill Tracts), the third became the king of Muñad (Burmah), and the fourth ruled over Naṁgaṭa (the Hill Tracts of Assam, Kachar and Tripura). Babla Sundara, it seems, was the king of Tripura and Cāṭigrāma (Chittagong).[13]

With respect to the 'Pandit's cap' (*Panzva-rtse riṅ*), mentioned above (page 25), the following information is available.

Dr. Waddell in his work on "The Buddhism of Tibet" has given a very interesting description of the Lamaist hats and cawls. "The majority of the hats, he writes, are of an Indian type, a few only being Chinese or Mongolian. The two most typical hats are believed by the Lamas to have been brought from India by the Buddhist Saint Padma Sambhana, the founder of Lamaism, and his coadjutor, Çāuti Rakṣita, in the eighth century. And both of these hats are essentially of an Indian pattern. The red hat, of the great Pandits *Panchen zva dmar* is alleged

[12] འདི་འདས་ནས་ས་འཐུག་འདིའི་སར་ཐོ་ཕྱམ་གཅོ་ལོང་རེར། ཕྱེས་ཀུ་ཙོ་དེ་གི་ཤར་ཆོས་ཀྱི་ཐུ་ཀུན་དེ་ལྷ་ཞེས་པ་མ་ཀ་དྷཱི་ སར་དཔང་ག་ཞིག་ཐུང་ ནས་གཅིག་པ་རྒྱ་ཆད་མཆོད་དེ་འདི་འདས་ནས་དེ་སར་ཐོ་གཅིངང་དེན་གཅིར་ལོང་ངོ།

(*Pagsam Jon-Zaṅ*, 133.)

[13] ཤར་རྒྱུར་ནས་ཀྱི་གཅིག དར་ཞིང་མ་ཀ་དྷ་གཙོམ་ནས་མཆལ་པ་མང་ཕོ་ཀོ་རིར་ཕྱོགས་རྒྱལ་ནས་དེར་ཅིམ་ པར་ཀྱི་ཕོ་ཤོ་ག་ཕྱ་ཏ་དང་ལོང་ ཙ་ཆ་ཏི་ལོགས་ཀྱིལ་ཆོས་ཀཱ་མང་ཕོ་གཅིགལ་ཏེ་ཀྱིལ་གཉའ་དང་ཤིང་གོང་རྒྱ་རོང་གཉི་པཏ་ཏེ་ཏ་ག་ར་དྷ་ལོགས་ཀྱང་དེ་ནས་ཕྱོགས་ལ། རྒྱལ་ཀྱིལ་ཀྱི་གག་ལ་ཀུན་དྷ་རས་ཕྱེ་ཚ་ཚེན་རྒྱལ་ཆུབ་ཆུ་ཞི་གཅིག་པ་ཕྱས་པའི་རྒྱང་རྒྱ་ཁཱ་ཏེ་ཏ་མང་ཕོ་གཙང་ནས་ཤུལ་མང་རྒྱས་ཤིང་། རྒྱང་ཁ་ཁོང་རྒྱ་ཀྱི་ཀ་ཤུ་ཅ་དང་། རྒྱ་མར་ཚ་ཏི་ཏ་ཤུ་ཅ་དང་། མྱ་ཀད་རྒྱ་བྱ་ལ་ཅ་ཅ་དང་། ནམ་མཁར་ཤུན་རྒྱ་ར་ཅ་རྒྱ་ཀྱི་ཞེས་པས་ཕྱོགས་པ་མཆོད་ལ།

(*Pagsam Jon-Zaṅ*, 124.)

to have been brought from India the foundation of Lamaism. Its shape is essentially that of the ordinary cap used in the colder parts of India during the winter, with lappets coming over the cap and the nape of the neck, which lappets are folded up as an outer brim to the cap in the hot part of the day. Such a cap is often worn by Indian ascetics when travelling in the winter time. It is quite probable that this kind of cap was introduced either by Padma Sambhana, Çānti Rakṣita or Atiça (Dīpaṁkara) into Tibet from Magadha. From the account of the origin of the *Pan-zva rtse riṅ* (called in Waddell's list *Panchen sneriṅ*) quoted from *Pagsam Jon-zaṅ*, it appears that the Buddhist *Yōgīs* and Pandits used caps either during their residence in the monastery or at the time of travel. It is very probable that the cap originated in Udyāna, the country from which both Padma Sambhana and Bālapāda came. The latter or earlier Buddhist Pandits who visited Cāṭigrāma must have introduced the use of caps among the Buddhist Pandits who were called *Mahantas.* Pilgrims from Kaçmīr and the Panjab still visit Sītākuṇḍa which has been a holy place both to the Brāhmans and Buddhists from very early time. In describing *Panchen sneriṅ* Dr. Waddell observes:—It is only worn with these longtails by the Dalai Lama and Panchen Lama, the Gahdan Khri-rinpo-chē, and the Tibetan Lama King or regent, during the assembly mass and empowering. *Pan-zva rtse riṅ*,[14] that is the Pandits cap with long or pointed top is generally made with the top point bent a little like a thorn of a rose, symbolical of penetration and piercing.

The name Paṇḍita Vihāra and the story of disputation with the *Tīrthīkas* (Brāhmaṇas) goes to show that Chittagong was place of learning sixteen centuries ago if not earlier still.

[14] *Pan-zva rtse riṅ* means the long pointed cap of the Pandits. *Pan* or *Panchen*, means great Pandits, *zva* cap, *rtse* 'point' (Skt. *agra*), and *riṅ* 'long.'

On the Kāçmīrī Noun.—*By* G. A. Grierson, C.I.E., Ph.D., I.C.S.

[Read December, 1897.]

A. Gender.

Kāçmīrī nouns are either masculine or feminine. There is no neuter gender in the language. In the case of pronouns, however, there is a relic of a neuter gender, each pronoun having three forms, one, for male living beings, another, for female living beings, and a third for things without life, whether their grammatical gender is masculine or feminine.

The sixth part of Īçvara-kaula's *Kaçmīraçabdāmṛta* deals with gender. The following rules are abstracted from it.

The feminine gender is used for the following purposes (vi. 18.) :—

(*a.*) To denote the female sex, *e.g.*

Masc.	*Fem.*
꣟ꣃꣀ꣔꣟ *mŏŋgur*ᵘ, a male kid	꣟ꣃꣀ꣟ *mŏŋgᵊrᵃ* a female kid.
꣜꣟ꣀ *wat͡shᵘ*, a male calf	꣜꣟꣟ *wat͡shᵃr*, a female calf.

(*b.*) To denote smallness, *e.g.*

꣆꣔꣟ *katur*ᵘ, a large potsherd	꣆꣟꣟ *katᵊrᵃ*, a small potsherd.

(*d.*) To denote artificiality, *e.g.*

꣙꣟꣏ *t͡sās*, a cough	꣙꣟꣏꣟ *t͡sākhᵃr*, an artificial cough, a "hem."

(*e.*) To denote similarity, *e.g.*

꣆꣄꣐ *kothᵘ*, a load	꣆꣄꣜ *kwat͡shᵃ*, a bag.
꣔꣟꣔꣟ *tatur*ᵘ, smarting (of a wound)	꣔꣟꣟ *tatᵊrᵃ*, the pain felt by an angry person.

(*f.*) To denote special meanings, *e.g.*

꣔꣟꣔ *nạrᵘ*, a sleeve	꣔꣟꣟ *nạrᵃ*, an arm.
꣆꣟꣔ *khạrᵘ*, having a scald-head	꣆꣟꣟ *khạrᵃ*, the disease of scald-head.

1. Words signifying human castes or professions, form their feminines by adding बाय् *bāy* (vi. 2) [to the oblique form used in the case of compound words. *Vide post*, under that head]. [The word then means 'wife of so and so'].

Thus :—

बट *baṭ*ᵘ, a Brāhmaṇ	बटबाय् *baṭabāy*, a wife of a Brāhmaṇ.
दर् *dar*, name of a Brāhmaṇ caste	दरबाय् *darabāy*, wife of a *Dar*.
कौल् *kaul*, name of a Brāhmaṇ caste	कौलबाय् *kaulabāy*, wife of a *Kaul*.
सुन्र् *sŏnᵒr*, a goldsmith	सुन्र्बाय् *sŏnᵒrbāy*, the wife of a goldsmith.
खार् *khār*, a blacksmith	खारबाय् *khārabāy*, a blacksmith's wife.

We can only use this for human beings. Thus, कोतर्बाय् *kōtarbāy* means the wife of a man of the *kōtar* caste, and not the wife of a pigeon (कोतुर् *kōtur*), the feminine of which is कोत्रु *kōtᵘrᵘ*.

Cf. No. 9.

2. When respect is not intended कलय् *kŏlay* is substituted for बाय् *bāy* in the meaning of wife (vi. 3). Thus :—

बटकलय् *baṭakŏlay* ;

So from

चान् *chān*, a carpenter	चानकलय् *chānakŏlay*, the wife of a carpenter.

Cf. No. 9.

(3) All words ending in *u-mātrā*, change it to *ū-mātrā* in the feminine (vi. 4), thus :—

पट् *paṭ*ᵘ, a board	पटू *paṭᵘ*, a tablet.
मट् *moṭ*ᵘ, fat	मटू *mwaṭᵘ*.
गर् *gaṛ*ᵘ, hard	गरू *gaṛᵘ*.
गुर् *gur*ᵘ, a horse	गुरू *gurᵘ* a mare.
दब् *dob*ᵘ, a washerman	दबू *dwaḅᵘ*, a woman who does washing. [Thus जान दबू *Jānᵒ dwaḅᵘ*, Jāna the washerwoman. A washerman's wife would be दबिबाय् *dwaḅⁱbāy*.]

ख॑रु *khạr*^{u}, having a scald head	ख॑रू *khạr*^{ū}, the disease of scald-head.
गूरु *gūr*^{u}, a cowherd	गूरू *gūr*^{ū}, as in ज़ून गूरू *Zūn*^{a} *gūr*^{ū}, Zūna the cowherdess. A cowherd's wife is गूरिबाय् *gūr*^{i}*bāy*.

Note also words like—

कतुरु *katur*^{u}, a large potsherd	कत्रू *kat*^{ə}*r*^{ū}, a small ditto.
म्वंगुरु *moŋgur*^{u}, a male kid	म्वंग्रू *mŏŋg*^{ə}*r*^{ū} a female kid.
ततुरु *tatur*^{u}, smarting of a wound	तत्रू *tat*^{ə}*r*^{ū} the pain of anger.
वोवुरु *wōwur*^{u}, a weaver	वोव्रू *wōw*^{ə}*r*^{ū}, a woman weaver. [A weaver's wife is वोव्रिबाय् *wōw*^{ə}*r*^{i}*bāy*.]
गगुरु *gagur*^{u}, a rat	गग्रू *gag*^{ə}*r*^{ū}.

As in the five last examples, all words of three or more syllables omit a penultimate उ *u*, when forming the feminine (vi. 8). Cf. No. 4*a*.

The word छ़ॊटु *tshoṭ*^{u}, small, makes its feminine छ़ॊटू *tshwạṭ*^{ū}, or छ़ुटिञ् *tshwaṭiñ* (Cf. No. 8.) The latter is only used with reference to human beings. The former is universally used (vi. 5), thus:—छ़ॊटू (or छ़ुटिञ्) कूरू *tshw*^{ə}*ṭ*^{ū} (or *tshwaṭiñ*) *kūr*^{ū}, a small girl.

So also we have खर् *khar*, an ass, feminine ख॑रू *khạr*^{ū} or खरिञ् *khariñ* (see No. 8).

(4). Words ending in लु *l*^{u}, are subject to the following rules (vi. 7, 8, 29).

(*a*) Words of three syllables and over, ending in *ul*^{u} change *ul*^{u} to *ə*^{j}^{ū}, thus:—

	Feminine.
गाटुलु *gāṭul*^{u}, clever	गाट्जू *gāt*^{ə}*j*^{ū}.
फुटुलु *phuṭul*^{u}, a bundle of things tied up in a shawl, &c.	फुट्जू *phuṭ*^{ə}*j*^{ū} a small bundle.
च़कुलु *tsakul*^{u}, circular	च़क्जू *tsak*^{ə}*j*^{ū}.
पतुलु *patul*^{u}, a raft	पत्जू *pat*^{ə}*j*^{ū}, a mat.
ग्वगुलु *gŏgul*^{u}, a big turnip	ग्वग्जू *gŏg*^{ə}*j*^{ū}, an ordinary turnip.
च़तुलु *tsŏtul*^{u}, a sodomite	च़त्जू *tsŏt*^{ə}*j*^{ū}.

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वातुलु *wātul*^{u}, a low-caste man — वात्जू *wāt*^{ə}*j*^{ā}.

टठुलु *ṭaṭhul*^{u}, a wooden vessel — टठ्जू *ṭaṭh*^{ə}*j*^{ā}, a small ditto.

(*b*) Words ending in the suffix वोलु *wōl*^{u}, form the feminine in वाज्यञ् *wājĕñ*, thus:—

गर्वोलु *gar*^{a}*wōl*^{u}, a house-holder — गर्वाज्यञ् *gar*^{a}*wājĕñ*.

The word वोलु *wōl*^{u}, 'a ring' is not formed with this suffix.

(*c*) Other words in *l*^{u} form their feminines in जू *j*^{ā}, thus:—

गूलु *gūl*^{u}, a kernel — गूजू *gūj*^{ā}, a small ditto.

Words in ओलु *ōl*^{u} change ओ *ō* to आ *ạ̄*, thus:—

वोलु *wōl*^{u}, a small ring — वा॑जू *wạ̄j*^{ā}, a small ditto.

मोलु *mōl*^{u}, a father — मा॑जू *mạ̄j*^{ā}, a mother.

च़्रोलु *ts̱rōl*^{u}, watchman — च़्रा॑जू *ts̱rạ̄j*^{ā}.

Irregular is—

डुलु *ḍul*^{u}, a large bowl — डुलि्जि *ḍulij*^{i}, a small ditto.

(5) Words ending in कु *k*^{u}, खु *kh*^{u}, गु *g*^{u} (and also in क् *k*, ख् *kh*, ग् *g*; but no examples are given) change क् *k* to च् *c*, ख् *kh* to छ *ch*, and ग् *g* to ज् *j* (vi. 9), thus:—

	Feminine.
बतुकु *batuk*^{u}, a drake	बत्चू *bat*^{ə}*c*^{ā}, a duck.
ह्वखु *hokh*^{u}, dry	ह्वछू *hwạch*^{ā}.
ग्रूँगु *ḍyū̃g*^{u}, a ball of string	डीँजू *ḍī̃j*^{ā}, a small ditto.

The vowel changes are those prescribed in the declension of nouns. Içvara-kaula occasionally spells बत्चू *bat*^{ə}*c*^{ā} बत्च् *bat*^{a}*c*.

Exceptions are (vi. 10.)

खूँखु *khū̃kh*^{u}, one who speaks through his nose. — खूँखू *khū̃kh*^{ā}.

च़कु *ts̱ok*^{u}, sour — च़्कू *ts̱wạk*^{ā}.

(6) Words in त *t*, थ *th*, द *d*, or न *n*, with or without *u-mātrā*, change त् *t* to च़् *ts*, थ् *th* to छ़् *tsh*, द् *d* to ज़् *z*, and न् *n* to ञ़् *ñ*. As usual, *ū-mātrā* is omitted, in writing, after ञ़् *ñ*, (vi. 11.)

म॑तु *mạt*^{u}, mad	म॑च़ू *mạts*^{a}.
क्व॑थु *koth*^{u}, a load	क्व॑छ़ू *kwạtsh*^{a}, a bag.
व्वरुदु *wŏrud*^{u}, a second husband of one woman.	व्वर्ज़ू *wŏrᵊz*^{a}, a woman who has married twice.
वन् *wan*, a forest	व॑ञ़् *wạñ*, a grove.
गान् *gān*, a brothel-keeper	गा॑ञ़् *gạ̄ñ*, a prostitute.
छान् *chān*, a carpenter	छा॑ञ़् *chạ̄ñ*, as in ज़ून छा॑ञ् *Zūn*^{a} *chạ̄ñ*, Zūna the carpentress.
हूनु *hūn*^{u}, a dog	हूञ़् *hūñ*, a bitch.

(7) Certain words form their feminines by adding र *r* with various other changes, thus:—

	Feminine.
कंग् *kaŋg*, a brazier	काँग्र् *kā̃g*^{a}*r*, a small ditto (vi. 12.)
च़ास् *tsās*, a cough	च़ाख़्र् *tsākh*^{a}*r*, an artificial cough, (vi. 13.)
त्रख् *trăkh*, a certain grain weight	त्रक्र् *trak*^{a}*r*, a scale, (vi. 14.)
म्वं॑डु *moṇḍ*^{u}, a log	म्वंड्र् *mŏṇḍ*^{a}*r*, a small log (vi. 15.)
फ़॑तु *phot*^{u}, a basket	फ़त्र् *phŏt*^{a}*r*, a small basket (vi. 16.)
ल॑टु *lạṭ*^{u}, a tail	लट्र् *laṭ*^{a}*r*, a small tail, कूटि लट्र् *kūṭ*^{i} *laṭ*^{a}*r*, a piece of wood cut off the end of a beam.
व॑छ़ु *wạtsh*^{u}, a male calf	वछ़्र् *watsh*^{a}*r*, a female calf.

(8) Certain words form their feminines in इञ़् *iñ* (vi. 16–27), thus:—

	Feminine.
ह॑स्तु *hạst*^{u}, an elephant	हस्तिञ़् *hastiñ*.
काव् *kāv*, a crow	का॑विञ़् *kạ̄viñ*.
नाग् *nāg*, a snake.	ना॑गिञ़् *nạ̄giñ*.

बूँठ् *wūṭh*, a camel	बूँटिञ् *wūṭiñ*.
खर् *khar*, an ass	खरिञ् *khariñ*, (see No. 3) or ख॑रु *khar*^{u}.

And so other words signifying animals.

व्य॑ठु *vyạṭh*^{u}, stout	व्य॑ठू *vyạṭh*^{ū}, stout, but व्यठिञ् *vĕṭhiñ* (in a bad sense) stout, fat.
गूठु *gūṭh*^{u}, stupid	गूठिञ् *gūṭhiñ*.
ब्वट *bŏṭ*^{a}, a Tibetan	ब्वटिञ् *bŏtiñ*, (बुटिञ् *buṭiñ*), or ब्वटबाय् *bŏṭabāy*, a Tibetan woman.
बुगिय् *bugiy*, a master	बुगिञ् *bugiñ*, a mistress.
ज़ल् *zal*, water	ज़लिञ् *zaliñ*, sweat of the feet.
गर *gar*^{a}, a house	गरिञ् *gariñ*, a good mistress of a house; distinct from गर्वाज्यञ् *gar*^{a}*wājĕñ*, a female householder (see No. 9.)
द्व॑बु *dob*^{u}, a washerman	द्वबिञ् *dwabiñ*, a washerman's club, but द्व॑बिबाय् *dwạb*^{i}*bāy*, a washerman's wife.

(9) Certain nouns take अञ् *añ* in the feminine (vi. 28.)

(*a*) Names of castes.

Note that बाय् *bāy* (No. 1) is used as a feminine of respect; कलय् *kŏtay* (No. 2) is only used of a married woman, when spoken of in connexion with her husband, and without respect; while अञ् *añ* is a general feminine, without signifying respect, thus:—

बट *baṭ*^{a}, a Brāhmaṇ,	बटञ् *baṭañ*, a woman of that caste.
मुसल्मान् *musalmān*, a Musalmān	मुसल्मानञ् *musalmānañ*, a Muhammadan woman.
हाकग्राख् *hākagrākh*, a vegetable seller.	हाकग्राकञ् *hākagrākañ*.
वोञु *wōñ*^{u}, a shopkeeper	वाञ्यञ् *wāñyañ*, a female shopkeeper.

So also all nouns with the suffix वोल् *wōl*ᵃ, (vi. 29) as given in No. 4 (*b*). Thus :—

गर्वोल् *garᵃwōlᵃ*, a householder गर्वाज्यम् *garᵃwājĕñ*.

See also No. 8.

(10) If the masculine word ends in र् then the suffix is यम् *ĕñ* (vi. 30), thus (see Secondary Suffixes No. 39.)

Feminine.

सालर् *sālᵃr*, a member of bridegroom's party. सालर्यम् *sālᵃrĕñ*.

पहर् *pŏhar*, an invited guest पहर्यम् *pŏharĕñ*.

रंगर् *raŋgᵃr* a dyer रंगर्यम् *raŋgᵃrĕñ*.

सनर् *sŏnᵃr*, a goldsmith सनर्यम् *sŏnᵃrĕñ*.

दाँदर् *dā̃dᵃr*, a vegetable seller दाँदर्यम् *dā̃dᵃrĕñ*.

काँदर् *kā̃dᵃr*, a baker काँदर्यम् *kā̃dᵃrĕñ*.

So also we have—

सोन् *soñᵃ*, a co-father-in-law सोन्यम् *sŏñĕñ*.

महाराज् *mahārāzᵃ*, a great king महार्यम् *mahārĕñ*, the wife of a great king, a bride.

राज् *rāzᵃ*, a king राज्यर्यम् *rājyarĕñ*, a queen.

(11) Finally we have आम् *āṇ̃* in the following (vi. 31) :—

पंडित् *paṇḍith*, a paṇḍit पंडितांम् *paṇḍitāṇ̃*.

गुजर् *gujurᵃ*, a forester गुजरांम् *gujarāṇ̃*.

(12) Irregular is (vi. 18)—

मख् *măkh*, an axe मक्च् *makᵃts*, a small axe.

B. Number.

Kāçmīrī, has two numbers, a Singular and a Plural. There is no Dual number. The method of forming the plural will appear from the Declensional Paradigms.

C. Case.

Kāçmīrī nouns have, besides the Nominative, two inflected cases the Accusative, and the Agent. Other so-called cases are formed by the addition of postpositions to one of these two. The following are the cases given by Içvara-kaula.

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Formed from the Accusative :—

Genitive,
Locative 1,
Dative 1,
Concomitant.

Formed from the Agent :—

Instrumental,
Locative 2,
Dative 2,
Ablative.

There is no Vocative, but, in case of address, a noun assumes a variety of forms which will be dealt with later on.

There are thus, excluding the Nominative, ten cases.

I now proceed to deal with each case separately.

Accusative.

The Accusative has two forms, a longer and a shorter. The shorter is always the same as the nominative (ii. i. 39.)

In the masculine singular, the longer form always ends in *s*. In the feminine it ends in *a*, *ĕ*, *i*, or *ū-mātrā* (36–40). When the longer form of the accusative singular ends in *i*, that *i* is always fully pronounced. Thus मालि *māli*, not मा॑लि *mạ̄l*^{i}. In the plural it always ends in *n* (12, 38).

Genitive.

The Genitive is formed by various affixes, added to the long form of the accusative.

In the case of masculine nouns, the *s* of the accusative singular is dropped before the termination, and the final vowel so left is pronounced short, as a *mātrā* vowel. Thus from दय् *day*, God : acc. sg. दयस् *dayas* ; gen. sing. दय स॑न्दु *day*^{o} *sạnd*^{u} : acc. pl. दयन् *dayan* ; gen. plur. दयन् ह॑न्दु *dayan hạnd*^{u}.

So from गुरु *gur*^{u}, a horse : acc. sg. गुरिस् *guris* ; gen. sg., गुरि स॑न्दु *gur*^{i} *sạnd*^{u} : acc. pl. गुर्यन् *guryan* ; gen. pl. गुर्यन् ह॑न्दु *guryan hạnd*^{u}.

The word with its genitive affix is treated as an adjective agreeing with the object possessed in gender and number.

Thus मा॑लि स॑न्दु न्यचिवु *mạ̄l*^{i} *sạnd*^{u} *necyuv*, the son of the father.

मा॑लि स॑न्दि न्यचिवि *mạ̄l*^{i} *sạnd*^{i} *neciv*^{i}, the sons of the father.

माॅलि ᵘसन्ज़ कुर् *māl*ⁱ *sanz*ᵃ *kūr*ᵃ, the daughter of the father.

माॅलि सन्ज़ कोरे *māl*ⁱ *sanz*ᵃ *kōrĕ*, the daughters of the father.

Moreover this genitive may even be treated as an independent base, and be regularly declined, with case affixes added to it.

Thus from मोल् *mōl*ᵘ, a father, the genitive masculine is माॅलि ᵘसन्द् *māl*ⁱ *sand*ᵘ, which may be declined like a masculine noun in *u-mātrā*, with a dative माॅलि सन्दि पुछ् *māl*ⁱ *sandi puṯshy*, which can be used instead of the simple dative मालि पुछ् *māli puṯshy*. Indeed the dative formed from the genitive is in the case of this word the usual one, and the simple dative is scarcely used (ii. i. 61, 62, 63, 64).

The following are the affixes used to form the genitive :—

A. Masculine nouns with life which are not proper names take

(*a*) in the singular, ᵘसन्द् *sand*ᵘ, *E.g.*, दय ᵘसन्द् *day*ᵃ *sand*ᵘ, of God (46).

(*b*) in the plural, ᵘहन्द् *hand*ᵘ, *E.g.*, दयन् ᵘहन्द् *dayan hand*ᵘ, of Gods (42).

B. All feminine nouns without exception take ᵘहन्द् *hand*ᵘ, both in the singular, and in the plural. *E.g.*, बञ़ ᵘहन्द् *bĕñĕ hand*ᵘ, of the sister; बञ़न् ᵘहन्द् *bĕñan hand*ᵘ, of the sisters; पोथ ᵘहन्द् *pōthĕ hand*ᵘ, of the book; पोथ्यन् ᵘहन्द् *pōthyan hand*ᵘ, of the books (42).

C. Masculine nouns without life take.

(*a*) In the singular उक् *uk*ᵘ, (48) before which *a* is elided (i. 4), and *i* becomes *y* (i. 10). While when it follows *ū-mātrā*, the *u* of *uk*ᵘ is elided (i. 5). *E.g.*, द्यकुक् *ḍyakuk*ᵘ, of a forehead; कुल्युक् *kulyuk*ᵘ, of a tree; दानूक् *dāṇ*ᵘ*k*ᵘ, of a pomegranate.

(*b*) In the plural, the termination is ᵘहन्द् *hand*ᵘ, as above; *e.g.*, द्यकन् ᵘहन्द् *ḍyakan hand*ᵘ, of foreheads.

Exception.—The words सन् *sŏn*, gold, and वंप् *rŏp*, silver, take the termination ᵘसन्द् *sand*ᵘ in the singular, when the genitive is used in the sense of 'composed of.' *E.g.*, सन ᵘसन्द् छथ्र् *sŏn*ᵃ *sand*ᵘ *chath*ᵃ*r*, an umbrella of gold, a golden umbrella. सनुक् छथ्र् *sŏnuk*ᵘ *chath*ᵃ*r*, would mean an umbrella belonging to gold,—a possessive genitive in fact (ii. i. 47).

Note.—When a genitive in उक् *uk*ª is treated as a declensional base, the उ *u* becomes अ *a* in the oblique cases (64). Thus पॅट् *pạṭ*ª, a woollen cloth. Gen. sg. पट्युक् *paṭyuk*ª: Dative, पटि पुछ् *paṭi puṯshy* or पट्यकि पुछ् *paṭeki* (spelled *paṭyaki*) *puṯshy*.

D. Masculine nouns which are proper names form their genitive singular in उन् *un*ª, which is treated exactly like उक् *uk*ª, (50). *E.g.*, राधाकृष्णुन् *Rādhākṛṣṇun*ª of Rādhākṛṣṇa: राधाकृष्णनि पुछ् *Rādhākṛiṣṇani puṯshy*, for Rādhākṛṣṇa.

The plural is formed regularly with हॅन्द् *hạnd*ª, e.g. रामन् हॅन्द् *Rāman hạnd*ª, of (many) Rāmas.

It will thus be seen that the suffix of the genitive of all plural nouns, and of all feminine nouns is हॅन्द् *hạnd*ª.

When the thing possessed is feminine singular, or masculine or feminine plural, the following changes in the genitive affixes occur:—

THING POSSESSED IN THE

Singular.		Plural.	
Masculine.	*Feminine.*	*Masculine.*	*Feminine.*
सॅन्द् *sạnd*ª	सॅन्ज़् *sạnz*ª (46, 44)	सॅन्दि *sạnd*ⁱ (46, 43)	सन्ज़् *sanz*ª (46, 45)
हॅन्द् *hạnd*ª	हॅन्ज़् *hạnz*ª (44)	हॅन्दि *hạnd*ⁱ (43)	हन्ज़् *hanz*ª (45)
उक् *uk*ª	चू *c*ª (49)	कि *k*ⁱ (48)	च *c*ª[1] (49)
उन् *un*ª	ञ़ *ñ* (51)	नि *n*ⁱ (50)	ञ़ *ñ* (51)

Examples in order as:—

मॉलि सॅन्द् न्यचिव् *mālⁱ sạndª nĕcyuv*, the son of the father.

मॉलि सॅन्ज़् कूर् *mālⁱ sạnzª kūrª*, the daughter of the father.

1 So written by Içvara-kaula. च *cĕ* would be more correct, but, चू *c* being a palatal letter, there is practically no difference in the pronunciation.

मॉल्लि सॅन्दि न्यचिवि *māl¹ sand¹ nĕciv¹*, the sons of the father.

मॉल्लि सन्ज़ कोयॅ *māl¹ sanz⁸ kōrĕ*, the daughters of the father.

माल्यन् हॅन्दू गुर् *mālyan hand⁸ gur⁸*, the horse of the fathers.

माल्यन् हॅन्ज़ गुर् *mālyan hanz⁸ gur⁸*, the mare of the fathers.

माल्यन् हॅन्दि गुरि *mālyan hand¹ gur¹*, the horses of the fathers.

माल्यन् हञ्ज़ गुर्यॅ *mālyan hanz⁸ gurĕ*, the mares of the fathers.

कुल्युक् लंग् *kulyuk⁸ lang*, a bough of a tree.

कुलिचू लॅण्ड़ू *kulic⁸ lanḍ⁸*, a twig of a tree.

कुलिकि लंग् *kulik¹ lang*, the boughs of the tree.

कुलिच लॅञ्जा *kulic⁸ lanjĕ*, the twigs of the tree.

रामुन् न्यचिव् *Rāmun⁸ nĕchyuv*, Rāma's son.

रामॅञ् कूर् *Rāmañ kūr⁸*, Rāma's daughter.

रामॅनि न्यचिवि *Rāmañ¹ nĕcivi*, Rāma's sons.

रामञ् कोयॅ *Rāmañĕ kōrĕ*, Rāma's daughters.

Locative, 1.

There are two forms of the Locative. The first I shall call Loc. 1. It has the meaning indicated by its postpositions.

This Locative is formed by adding the postpositions अन्दर् *andar* (ii. i. 52), in; मञ् *manz* (52), in; पठ् *pyăth* (52), upon; क्यथ् *kyăth* (53), in; to the longer form of the Accusative. In Poetry, वेष *vēṣ⁸* is also used in the sense of 'upon' (52). Thus मूल् *mūl*, a root; Acc. sg. मूलस् *mūlas*; Loc. sg. मूलस् अन्दर् *mūlas andar*; मूलस् मञ् *mūlas manz*, in a root; मूलस् पठ् *mūlas pyăth*, on a root; Acc. pl. मूलन् *mūlan*; मूलन् अन्दर् *mulan andar*, in roots.

The postposition क्यथ् *kyăth* can only be used with words which mean a receptacle. Thus we can say थालस् क्यथ् *thālas kyăth*, in a dish; or even नावि क्यथ् *nāvi kyăth*, in a boat; but we cannot say गरस् क्यथ् *garas kyăth*, in a house or मूलस् क्यथ् *mūlas kyăth*, in a root, because a house, or a root, are not used as receptacles for putting things into.

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क्यथ् *kyăth* can also be used with any word signifying a means of conveyance, and it must then sometimes be translated by 'on.' Thus गुरिस् क्यथ् *guris kyăth*, or गुरिस् प्यठ् *guris pyăṭh*, on horseback.

Loc. 2 will be dealt with subsequently.

Dative, 1.

There are two forms of the Dative, one formed by adding postpositions to the Accusative, the other by adding postpositions to the Instrumental. The first I shall call Dat. 1, the second, Dat. 2. The Dat. 2, will be subsequently dealt with.

Dat. 1 is formed by adding the postposition कितु *kyut*^{u}, for, to the longer form of the Accusative (ii. i. 54, 55). The compound thus formed, agrees in number and gender with the thing given, the word 'given' being taken in its widest sense to agree with the original meaning of the name of the case. The following are the forms which कितु *kyut*^{u} takes :—

Sing. Masc. कितु *kit*^{u} (*kyut*^{u})

Fem. किच़ू *kits*^{a}

Pl. Masc. कि॒ति *kit*^{i}

Fem. किच़ *kits*^{o}

Thus मा॑लिस् कितु अ॑नुन् पोञ़ु *mạ̄lis kyut*^{u} *ạnun pōñ*^{u}, he brought water (masc. sg.) for the father.

मा॑लिस् किच़ू अ॑ञ़ून् गाव् *mạ̄lis kits*^{a} *ạñ*^{a}*n gāv*, he brought a cow (fem. sg.) for the father.

गुरिस् कि॒ति अ॑निन् रव *guris kit*^{i} *ạnin rav*^{a}, he brought blankets (masc. pl.) for the horse.

ग्वरस् किच़ अञ्यन् पोथ्य *gŏras kits*^{o} *añyan pōthĕ*, he brought books (fem. pl.) for the teacher.

Concomitant.

This case is used in the sense of 'with,' or 'accompanying.' It is formed by adding the postpositions सू॑तिन् *sụ̄tin* or सू॑त्य् *sụ̄ty* to the longer form of the Accusative (ii. i. 60). Thus मा॑लिस् सू॑तिन् आव्

mạ̄lis sạ̄tin āv, he came with his father; बा॑यिस् सू॑त्य् म्यूलु *bạ̄yis sạ̄ty myūl*^{a}, he met with his brother; माल्यन् सू॑तिन् *mālyan sạ̄tin*, with the fathers.

In this case it is always implied that the person who is accompanied is the principal and he who accompanies, is the appendage (iv. 185).

Thus 'he came with his father' means here that he came in a subordinate character (iv. 185).

If it is wished to reverse the superiority of the parties we must use the word सान् *sān*. Thus मा॑लिस् सान् आव् *mạ̄lis sān āv*, he came with his father, means 'he brought his father along with him.' If सू॑तिन् *sạ̄tin* had been used, it would have meant that the father brought the son along with him (iv. 185).

Agent.

The case of the Agent is formed in the Singular as follows:—

(1) In the case of Masc. nouns ending in consonants by adding अन् *an*; thus दय् *day*, God; Ag. sg. दयन् *dayan*. In the older forms of the language the suffix was इ *i*: e.g., द॑यि द॑पु *dạy*^{i} *dạp*^{u}, by God it was said, God said. The modern phrase would be दयन् द॑पु *dayan dạp*^{u} (ii. i. 58).

(2) In the case of Masculine nouns (except pronouns) ending in *a*, the same suffixes appear. Thus from अक *ḍyak*^{a}, a forehead; Ag. sg. अकन् *ḍyakan*, or (old) अ॒कि *ḍĕk*^{i} (58). Pronouns take *i-mātrā* in the masc. sg., *e.g.*, त॑मि *tạm*^{i}, by him, (58).

(3)* In the case of Masculine nouns ending in *u-mātrā*, *i-mātrā* is substituted for *u-mātrā*. Thus, क॑रु *kạr*^{u}, a bracelet; Ag. sg. क॑रि *kạr*^{i} (56).

(4) In the case of Masculine nouns ending in *ū-mātrā*, by adding न् *n*; e.g., from दा॑नू *dạ̄n*^{a}, a pomegranate; Ag. sg. दा॑नून् *dạ̄n*^{a}*n*. [Īçvara-kaula gives no rule for forming the agent of these nouns, but the above is the correct form.]

(5) In the case of Feminine nouns ending in *a*, by substituting *i* (which is fully pronounced, and not *i-mātrā*) for *a*: e.g.,

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from ब्यञ् *bĕñĕ* (spelled *byañ*ᵃ), a sister; Ag. sg. ब्यञि *bĕñi* (56).

(6) In the case of Feminine nouns ending in *i-mātrā* or *ū-mātrā*, a fully pronounced *i* is substituted for the *i-mātrā* or *ū-mātrā*: e.g., from पूथि *pūthⁱ*, a book; Ag. sg. पोथि *pōthi*. So from कूर् *kūrᵘ*, a girl; Ag. sg. कोरि *kōri* (56).

(7) In the case of Feminine nouns ending in consonants, by adding a fully pronounced *i*: e.g., from माल् *māl* a garland, मालि *māli* (56). The irregular nouns, however, which end in *t*, *th*, *d*, *n*, *h*, and *l*, add *ū-mātrā*: e.g., from रात् *rāt*, night; Ag. sg. रा॑च़ू *rā̤ts*ᵘ. [This last rule is not expressly stated by Īçvara-kaula, but may be inferred from *sūtra* 7, read with *sūtra* 17.]

The Agent plural is formed by adding *au* (56). Before this, *a* is elided, and *i-mātrā* and *u-mātrā* become *y*. After *ū-mātrā* (except in the case of Feminine nouns in *ū-mātrā*, in which *y* is substituted) *au* becomes *v* (20). Examples are:—

From	Ag. Plural.
दय् *day*, God	दयौ *dayau*
ॲक *ḍyakᵃ*, the forehead	ॲकौ *ḍyakau*
क॑रु *kạrᵘ*, a bracelet	कर्यौ *karyau*
दा॑नू *dā̤nᵘ*, a pomegranate	दा॑नूव् *dā̤nᵘv*
ब्यञ् *bĕnĕ* (*byañᵃ*), a sister	ब्यञौ *bĕñau*
पूथि *pūthⁱ*, a book	पोथ्यौ *pōthyau*
कूर् *kūrᵘ*, a girl	कोर्यौ *kōryau*
माल् *māl*, a garland	मालौ *mālau*
रात् *rāt*, night	रा॑च़ूव् *rā̤ts*ᵘv

When postpositions are added to the agent of masculine nouns ending in consonants or *a*, the *n* of the Agent singular is dropped. Thus, from मूल् *mūl*, Ag. sg. मूलन् *mūlan*; Instr. मूल सू॑तिन् *mūlᵃ sṳtin*, not मूलन् सू॑तिन् *mūlan sṳtin* (4). [The same rule applies to masculines in *ū-mātrā*, though not stated by Īçvara-kaula.]

Instrumental.

The Instrumental is formed by adding स्ऱ॑तिन् *sṛtin* or स्ऱ॑त्य् *sṛty* to the Agent, the final *n* of Masculine nouns in consonants, *a*, or *ū-mātrā* being elided, (ii. i. 4, 59.). Thus—

मूल् *mūl*, a root; Ag. sg. मूलन् *mūlan;* Instr. sg. मूल स्ऱ॑तिन् *mūl*^{a} *sṛtin*, by means of a root; Ag. pl. मूलौ *mūlau;* Instr. pl. मूलौ स्ऱ॑तिन् *mūlau sṛtin.*

When स्ऱ॑तिन् *sṛtin* follows *i-mātrā*, the *i* is fully pronounced (6). Thus क॑रु *kạr*^{u}, a bracelet; Ag. sg. क॑रि *kạr*^{i}; Instr. sg. करि स्ऱ॑तिन् *kari sṛtin.*

This case can also be formed by adding the same postposition to the agent case of the masculine genitive treated as an independent base, as explained above (61). Thus ॲक *ḍyak*^{a}, a forehead; masc. gen. sg. ॲकुकॖ *ḍyakuk*^{u}; Agent of ditto, ॲक॑कि *ḍyakạk*^{i}; Instr. ॲक स्ऱ॑तिन् *ḍyak*^{a} *sṛtin* or ॲककि स्ऱ॑तिन् *ḍyakaki sṛtin.*

So from गुरु *gur*^{u}, a horse. Ag. sg. गुरि *gur*^{i}; Gen. Sg. गुरि स॑न्दॖ *gur*^{i} *sạnd*^{u}; Instr. गुरि स्ऱ॑तिन् *guri sṛtin*, or गुरि सन्दि स्ऱ॑तिन् *gur*^{i} *sandi sṛtin.*

Locative 2.

The Locative 2 has the meaning of 'from in,' and is formed by adding the postposition अन्द्र *andr*^{a} to the Agent, (*n* being dropped in the case of masculines in consonants, and *a*, and *ū-mātrā*.) Thus, from गर *gar*^{a}, a house; Ag. sg. गरन् *garan*; Loc. 2, sg. गर अन्द्र *gar*^{a} *andr*^{a}, from in the house; ag. pl. गरौ *garau*; Loc. 2, pl. गरौ अन्द्र *garau andr*^{a}, (ii. i. 57).

Examples of the use of this case are गर अन्द्र अन् *gar*^{a} *andr*^{a} *an* bring out from the house, lit. bring from in the house.

गर अन्द्र छुह् जान् ल॑ाक *gar*^{a} *andar*^{a} *chuh jān lạ̄k*^{a}, among the people in (lit. from in) the house, (only) so and so is good.

गरौ अन्द्र छुह् जान् आँगुन् *garau andr*^{a} *chuh jān ā̃gun*, the only good thing in the houses is the court-yard.

This form can only be used in the meaning called in Skr. *nirdhāraṇā*, *i.e.*, in words meaning जाति *jāti*, a species (including all plurals); गुण *guṇa*, a quality; क्रिया *kriyā*, an act; संज्ञा *saṁjñā*, an appellation; and means that one of several is taken.

जात्या गुणेन क्रियया संज्ञया वा पृथक्कृतिः ।

समूहादेकदेशस्य निर्धारणमिति स्मृतम् ॥

Examples:—

Species. A Brāhmaṇa is the best amongst men.

Quality. Amongst cows a black one gives most milk.

Action. Amongst men who go, he who runs is the swiftest.

Appellation. Amongst the pupils Maitra is the cleverest. See Siddhānta Kaumudī (Bibl. Ind. Ed.) I, 311. In all the above "amongst" means "from among."

It is evident that the form can hardly ever be used except in the plural. In the paradigms, singular forms are given for the sake of completeness, but it is doubtful if they can be used in that number.

Dative 2.

According to Içvara-kaula, this form is only used to a moderate extent (*sāmānya*) (ii. i. 63). It is in fact rarely used. It has the same meaning as the Dat. 1. It is formed by adding पुछ्य् *puṯshy* to the Agent, or (as has been explained under the head of the Instrumental) to the Agent case of the Genitive. Before पुछ्य् *puṯshy*, as in the case of स्वतिन् *ṣvtin*, *i-mātrā* is fully pronounced. Thus,—पुत्र पुछ्य् *putr° puṯshy*, or पुत्र सन्दि पुछ्य् *putr° sandi puṯshy*.

Ablative.

The Ablative is formed from the Agent by adding the postpositions पठ *pyath°*, literally from on, hence, from near; निश्र *niç°*, from near; अन्द्र *andr°*, from among, from in (ii. i. 65).

Thus, गाम पठ *gām° pyath°*, from the village; गामो पठ *gāmau pyath°* from the villages; सर्पों निश्र *sarpau niç°*, from the serpents; गर अन्द्र द्राव् *gar° andr° drāv*, he came out from the house; नावि अन्द्र द्राव् *nāvi andr° drāv*, he came out from the boat, (65).

[Masculine living beings can also add these postpositions, in the singular only, to the longer form of the Accusative. Thus च़ूरस् निश *tsūras niç*ᵃ, from the thief; गुरिस् निश *guris niç*ᵃ, from the horse.]

The ablative of comparison is formed with the postpositions ख़त *khŏt*ᵃ or ख़तन् *khŏtan*, निश *niç*ᵃ or निशिन् *niçin*, which are added either to the agent direct, or to the Agent case of the Genitive treated as a base. In the case of some words, *e.g.*, ग्वर् *gŏr*, a teacher, only the latter idiom is used.

E.g., ग्वर सन्दि ख़त छुह् गाटुलु *gŏr*ᵃ *sandi khŏt*ᵃ *chuh gāṭul*ᵃ, he is more clever than the teacher. We cannot say ग्वर ख़त *gŏr*ᵃ *khŏt*ᵃ. कञ़ हन्दि (or कञ़) ख़त छुह् त्रकुरु *kañ*ᵃ *handi* (or *kañ*ᵃ) *khŏt*ᵃ *chuh trakur*ᵃ, he is harder than a stone; र्वप निश छुह् स्वन् जान् *rŏp*ᵃ *niç*ᵃ *chuh sŏn jān*, gold is better than silver (ii. i. 62).

D. Declension.

Kāçmīri nouns have four declensions.

The first declension consists of masculine nouns ending in a consonant, in अ *a*, or in ऊ *ū-mātrā*. The base in this declension ends in *a*.

The second declension consists of masculine nouns ending in उ *u-mātrā*. The base in this declension ends in *i*.

The third declension consists of feminine nouns ending in इ *i-mātrā*, ऊ *ū-mātrā*, or ञ़् *ñ*. The last is only another way of writing ञ़ू *ñ*ᵘ. It may be considered as the feminine form of the 2nd declension. The base in this declension also ends in *i*, and this declension is closely connected with the second, as feminine and masculine.

The fourth declension consists of feminine nouns ending in a consonant or in अ *a*. Certain feminine nouns of this declension ending in a consonant, are irregular, and form a class by themselves.

There are thus two masculine, and two feminine declensions.

First Declension.

Masculine nouns ending in a consonant, in अ *a*, or in ज् *ū-mātrā*.

(*a*). Noun ending in a consonant.

चू़र् *ts̱ūr*, a thief.

	Singular.	Plural.
Nom.	चू़र् ts̱ūr (ii. i. 3).	चू़र् ts̱ūr (3).
Acc.	चू़रस् ts̱ūras (36, 38).	चू़रन् ts̱ūran (13, 38).
	चू़र् *ts̱ūr* (39).	चू़र् *ts̱ūr* (39).
Gen.	चू़र स॑न्दु *ts̱ūr*ᵃ *sạnd*ᵘ (41, 42, 45).	चू़रन् ह॑न्दु *ts̱ūran hạnd*ᵘ (42).
Loc. 1.	चू़रस् प्यठ् *ts̱ūras pyăṭh* (52), &c.	चू़रन् प्यठ् *ts̱ūran pyăṭh* (52), &c.
Dat. 1.	चू़रस् कितु *ts̱ūras kyut*ᵃ (54, 55).	चू़रन् कितु *ts̱ūran kyut*ᵘ (54, 55).
Concom.	चू़रस् स्यू॑तिन् *ts̱ūras sụ̄tin* (60).	चू़रन् स्यू॑तिन् *ts̱ūran sụ̄tin* (60).
Agent.	चूरन् ts̱ūran (58).	चू़रौ ts̱ūrau (56).
	चू़रि *ts̱ūr*ⁱ (58) (obsolete).	
Instr.	चू़र स्यू॑तिन् *ts̱ūr*ᵃ *sụ̄tin* (6, 59).	चू़रौ स्यू॑तिन् *ts̱ūrau sụ̄tin* (59).
	चू़र सन्दि स्यू॑तिन् *ts̱ūr*ᵃ *sandi sụ̄tin* (61).	चू़रन् हन्दि स्यू॑तिन् *ts̱ūran handi sụ̄tin* (61).
Loc. 2.	(चू़र अन्द्र *ts̱ūr*ᵃ *andr*ᵃ) (4, 57).	चू़रौ अन्द्र *ts̱ūrau andr*ᵃ (57).
Dat. 2.	चू़र पुछ्य् *ts̱ūr*ᵃ *puṯshy* (63).	चू़रौ पुछ्य् *ts̱ūrau puṯshy* (63).
	चू़र सन्दि पुछ्य् *ts̱ūr*ᵃ *sandi puṯshy* (63).	चू़रन् हन्दि पुछ्य् *ts̱ūran handi puṯshy* (63).
Abl.	चू़र निश *ts̱ūr*ᵃ *niç*ᵃ (65). [or चू़रस् निश *ts̱ūras niç*ᵃ].	चू़रौ निश *ts̱ūrau niç*ᵃ (65).

Similarly are declined दय् *day*, God; काव् *kāv*, a crow; सन् *sŏn*, gold; रूप् *rŏp*, silver; पुच् *putr*, a son; वथ्र् *wath°r*, a leaf; तमुल् *tŏmul*, husked rice; हार् *hār*, name of a month, Āṣāḍha; मंग् *mŏŋg*, name of a grain, *phaseolus mungi*; माग् *māg*, name of a month, Māgha; दह् *dŏh*, a day; नाग् *nāg*, a spring; कट् *kaṭ* [nom. sg. and pl. कठ् *kăṭh* (66)], a ram; रत् *rat* [nom. sg. and pl. रथ् *răth*, (66)], blood; पोष् *pōṣ*, a flower; वाल् *wāl*, hair; गल् *gal*, the cheek; ग्वर् *gŏr*, a preceptor, a Brāhman.

Numerals take *i* instead of *a* in the Agent and connected cases, *e.g.*, सति सुतिन् *sati sūtin*, by sevens (ii. i. 5).

If a noun ends in उर् *ur* [or उन् *un*], the *u* is changed to *a* in all cases except the nominative singular, *e.g.*, वांदुर् *wāndur*, a monkey; nom. pl. वांदर् *wāndar*; instr. वांदरौ सुतिन् *wāndarau sūtin* (32). [So infinitives like करुन् *karun*; acc. करनस् *karanas*].

If in the case of masculine nouns of the first declension the final consonant is preceded by the vowel *ū*, that *ū* becomes *ō*, in all cases of the plural except the nominative, but remains unchanged in the singular and in the nominative plural. The following masculine words ending in consonants do not, however, change this *ū* (35).

मूल् *mūl*, a root.

चूल् *chūl*, a cascade.

डूस् *ḍūs*, a stout club.

बूत् *būt* (nom. sg. बूथ् *būth*, 66), a ghost.

रूद् *rūd*, rain.

लूद्र् *lūd°r*, eagerly desirous.

लूबर् *lūb°r*, eagerly desirous.

वुंट् *wŭṭ* (nom. sg. वुंठ् *wŭṭh*, 66), a camel.

सुर् *sūr*, ashes.

हूस् *hūs*, an uproar.

[चूर् *ṭsūr*, a thief], and others.

लूक् *lūk* (nom. sg. लूख् *lūkh*, 66), people.

Thus from मूल् *mūl*, acc. pl. मूलन् *mūlan*, not मोलन् *mōlan*.

If a masculine noun ends in क् *k*, च् *ch*, च़् *ṯs*, ट् *ṭ*, त् *t*, or प् *p*, this final consonant is aspirated in the nom. sg. and pl. (66); thus:—

	Nom. sg. and pl.
चक् *trak*, a certain grain measure.	चख् *träkh*.
काच़् *kāṯs*, glass, a disease of the chest.	काछ् *kāṯsh*.
कट् *kaṭ*, a ram.	कठ् *käṭh*.
रत् *rat*, blood.	रथ् *räth*.
हत् *hat*, a hundred.	हथ् *häth*.
ताप् *tāp*, sunshine.	ताफ् *tāph*.

The aspiration is very faintly heard, being a final letter, but it affects the preceding vowel. The aspiration does not occur in the other cases; *e.g.*, चक स्यूंतिन् *trak° sūtin* (instr.); काच़् स्यूंतिन् *kāṯs° sūtin*; कट पुछ् *kaṭ° puṯshy* (dat. 2); तापस् प्यठ् *tāpas pyäṭh* (loc.).

This aspiration does not occur if a final त् *t* or च़् *ṯs* forms part of a compound consonant (even when a short ° is introduced between them to aid pronunciation) (68); thus:—

सच़् *s°ṯs*, a tailor (Elmslie, *sūts*); nom. sg. and pl. सच़् *s°ṯs*, not सछ् *s°ṯsh*.

मस्त् *mast*, hair; nom. sg. and pl. मस्त् *mast*, not मस्थ् *mästh*.

The word ब्याख् *byākh*, another (2, 3, 24), becomes बिय् *biy* in all cases except the nom. sg., and is partially declined like a noun ending in *u-mātrā* (2nd declension); thus—

	Singular.	Plural.
Nom.	ब्याख् *byākh*	बिय् *biy*.
Acc.	बियिस् *biyis*.	बियन् *biyan*.
Ag.	बियि *biyi*.	बियो *biyau*.

The Fem. Ag. is बियि *biyi*. In other forms it is the same as the Masc. This is really a compound word: made up of बि *bi*, other, and अख् *äkh*, one. The oblique forms are made up of the base बि *bi*, together with the emphatic particle य् *y*, which accounts for the apparent irregularities. बि *bi* is of the 2nd declension.

Noun ending in अ *a*.

ड्यक *ḍyak*ª a forehead.

	Singular.	Plural.
Nom.	ड्यक *ḍyak*ª (ii. i. 1).	ड्यक *ḍyak*ª (1).
Acc.	ड्यकस् *ḍyakas* (38).	ड्यकन् *ḍyakan* (38).
	यक *ḍyak*ª (39).	यक *ḍyak*ª (39).
Gen.	यकुक् *ḍyakuk*ª (41, 48).	यकन् ह्यन्द् *ḍyakan hạnd*ª (42).
Loc. 1.	यकस् प्यठ् *ḍyakas pyăṭh*, &c., (52, 53).	यकन् प्यठ् *ḍyakan pyăṭh*, &c. (52, 53).
Dat. 1.	यकस् कित् *ḍyakas kyut*ª (54, 55).	यकन् कित् *ḍyakan kyut*ª (54, 55).
Concom.	यकस् स्यूतिन् *ḍyakas sūṭin* (60).	यकन् स्यूतिन् *ḍyakan sūṭin* (60).
Agent.	ड्यकन् *ḍyakan* (i. 5*a*) or यकि *ḍĕk*ⁱ (obsolete) (58; i. 4).	ड्यकौ *ḍyakau* (56; i. 4).
Instr.	यक स्यूतिन् *ḍyak*ª *sūṭin* (6, 59).	यकौ स्यूतिन् *ḍyakau sūṭin* (59).
	यककि स्यूतिन् *ḍyakaki sūṭin* (61).	यकन् हन्दि स्यूतिन् *ḍyakan handi sūṭin* (61).
Loc. 2.	यक यन्द्र *ḍyak*ª *andr*ª (4, 57).	यकौ यन्द्र *ḍyakau andr*ª (57).
Dat. 2.	यक पुछ् *ḍyak*ª *puṯshy* (63).	यकौ पुछ् *ḍyakau puṯshy* (63).
	यककि पुछ् *ḍyakaki puṯshy* (67).	यकन् हन्दि पुछ् *ḍyakan handi puṯshy* (63).
Abl.	यक निश्र *ḍyak*ª *niç*ª (65).	यकौ निश्र *ḍyakau niç*ª (65).

Similarly are declined गर *gar*ª, a house; यथ *ăth*ª, a hand; दाञ *dāñĕ*, rice; बत *bat*ª, boiled rice.

(*c*). Noun ending in ऊ *ū-mātrā*.

दा॑नू *dạ̄nᵘ*, a pomegranate.

Nom.	दा॑नू dạ̄nᵘ (ii. i. 2).	दा॑नू dạ̄nᵘ (2).
Acc.	दा॑नूस् dạ̄nᵘs (38).	दा॑नून् dạ̄nᵘn (31, 13, 33).
	दा॑नू *dạ̄nᵘ* (39).	दा॑नू *dạ̄nᵘ* (39).
Gen.	दा॑नूकु *dạ̄nᵘkᵘ* (41, 48).	दा॑नून् ह॑न्दु *dạ̄nᵘn hạndᵘ* (42).
Loc. 1.	दा॑नूस् प्यठ् *dạ̄nᵘs pyăṭh*, &c. (52, 53).	दा॑नून् प्यठ् *dạ̄nᵘn pyăṭh*, &c. (52, 53).
Dat. 1.	दा॑नूस् कितु *dạ̄nᵘs kyutᵘ* (54, 55).	दा॑नून् कितु *dạ̄nᵘn kyutᵘ* (54, 55)
Concom.	दा॑नूस् स्व॑तिन् *dạ̄nᵘs sụ̄tin* (60).	दा॑नून् स्व॑तिन् *dạ̄nᵘn sụ̄tin* (60).
Agent.	दा॑नून् dạ̄nᵘn.	दा॑नूव् dạ̄nᵘv (20, 31, 56).
Instr.	दा॑नू स्व॑तिन् *dạ̄nᵘ sụ̄tin* (59).	दा॑नूव् स्व॑तिन् *dạ̄nᵘv sụ̄tin* (59).
	दा॑नूकि स्व॑तिन् *dạ̄nᵘki sụ̄tin* (61).	दा॑नून् हन्दि स्व॑तिन् *dạ̄nᵘn handi sụ̄tin* (61).
Loc. 2.	दा॑नू अन्द्र *dạ̄nᵘ andrᵃ* (57).	दा॑नूव् अन्द्र *dạ̄nᵘv andrᵃ* (57).
Dat. 2.	दा॑नू पुछ्य् *dạ̄nᵘ putshy* (63).	दा॑नूव् पुछ्य् *dānᵘv putshy* (63).
	दा॑नूकि पुछ्य् *dạ̄nᵘki putshy* (63).	दा॑नून् हन्दि पुछ्य् *dạ̄nᵘn handi putshy* (63).
Abl.	दा॑नू निश *dạ̄nᵘ niçᵃ* (65).	दा॑नूव् निश *dạ̄nᵘv niçᵃ* (65).

Içvara-kaula gives no rule for forming the agent singular of these nouns. but दा॑नून् *dạ̄nᵘn* is the correct form.

The following words are optionally declined as if ending in consonants, ग॑ञ्ज़ू *gạnzᵘ*, a leather-worker; गा॑सू *gạ̄sᵘ*, a grass-seller; बा॑च़ू *bạ̄tsᵘ*,

people of a house; हा॑ञ्ज़ू *hạ̄nz*^{a}, a boatman. Thus, acc. plur. ग॑ञ्ज़ून् *gạnz*^{a}*n* or गञ्ज़न् *ganzan* (15).

It must be remembered that *ū-mātrā* at the end of a word is not pronounced. Before a consonant (as in *dạ̄n*^{a}*v*) it is pronounced like a short German *ü*. It is, also, slightly pronounced in the Instr. Loc. 2, Dat. 2, and Abl. Sing. Before *ū-mātrā*, a preceding *a* or *ā* must be modified to *ạ* or *ạ̄* respectively (70); *e.g.*, as in दा॑नू *dạ̄n*^{a}.

SECOND DECLENSION.

Masculine Nouns in उ *u-mātrā*.

क॑रु *kạr*^{u}, a bracelet.

Nom.	क॑रु **kạr**^{u} (ii. i. 8).	क॑रि **kạr**^{i} (30).
Acc.	करिस् **karis** (30, 38).	कर्यन् **karyan** (12, 30, 38).
	क॑रु *kạr*^{u} (39).	क॑रि *kạr*^{i} (39).
Gen.	कर्युकु *karyuk*^{u} (41, 48).	कर्यन् ह॑न्दु *karyan hạnd*^{u} (42).
Loc. 1.	करिस् प्यठ् *karis pyăṭh*, &c. (52, 53).	कर्यन् प्यठ् *karyan pyăth*, &c. (52, 53).
Dat. 1.	करिस् कितु *karis kyut*^{u} (54, 55).	कर्यन् कितु *karyan kyut*^{u} (54, 55).
Concom.	करिस् सू॑तिन् *karis sụ̄tin* (60).	कर्यन् सू॑तिन् *karyan sụ̄tin* (60).
Agent.	क॑रि **kạr**^{i} (6, 56).	कर्यौ **karyau** (56, 80; i. 10).
Instr.	करि सू॑तिन् *kari sụ̄tin* (59).	कर्यौ सू॑तिन् *karyau sụ̄tin* (59).
	कर्यकि सू॑तिन् *karĕki sụ̄tin* (61).	कर्यन् हन्दि सू॑तिन् *karyan handi sụ̄tin* (61).
Loc. 2.	करि अन्द्र *kari andr*^{a} (57).	कर्यौ अन्द्र *karyau andr*^{a} (57).
Dat. 2.	करि पुछ्य् *kari putshy* (63).	कर्यौ पुछ्य् *karyau putshy* (63).
	कर्यकि पुछ्य् *karĕki putshy* (63).	कर्यन् हन्दि पुछ्य् *karyan handi putshy* (63).
Abl.	करि निश *kari niç*^{a} (65).	कर्यौ निश *karyau niç*^{a}.

[also गुरिस निश *guris niç*^{a} (in the case of masculine nouns with life).]

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the penultimate *u* to *a* in all cases except the nominative, and are then declined like nouns of the first declension ending in consonants (74.)

क्वछुलु *kŏtshul*^{u}, a porter.

च्वतुलु *tsŏtul*^{u}, a sodomite.

च़कुलु *tsakul*^{u}, circular.

ग्वगुलु *gŏgul*^{u}, globular.

वातुलु *wātul*^{u}, a low-caste man.

षतुकु *batuk*^{u}, a drake.

गगुरु *gagur*^{u}, a rat.

म्वङ्गुरु *mŏngur*^{u}, a kid.

क्वकुरु *kŏkur*^{u}, a cock (iv. 1).

कोतुरु *kōtur*^{u}, a pigeon (iv. 1).

So also words in रु *r*^{u} signifying professions, &c. (iv. 6, 99 and ff.), *e.g.*, स्वनुरु *sŏnur*^{u}, a goldsmith, मनुरु *manur*^{u}, a shell worker.

See secondary suffixes No. 39.

Thus,—

Nom. sg. क्वछुलु *kŏtshul*^{u}; acc. sg. क्वछ़लस् *kŏtshalas*; gen. sg. क्वछ़ल सन्दु *kŏtshal*^{a} *sạnd*^{u}; ag. sg. क्वछ़लन् *kŏtshalan*; instr. sg. क्वछ़ल सूतिन् *kŏtshal*^{a} *sụ̄tin*; nom. pl. क्वछ़ल् *kŏtshal*; acc. pl. क्वछ़लन् *kŏtshalan*; ag. pl. क्वछ़लौ *kŏtshalau*.

If a word ending in *u-mātrā* has *yu* or *i* in the penultimate of the nom. sg., it has *i* in the penultimate in all the other cases (ii. i. 76). [These words are spelt indifferently with *yu* or *i* in the nominative, but are always pronounced as if *yu* was written. Thus महन्युवु *mahanyuv*^{u}, or महनिवु *mahaniv*^{u}, a man, both pronounced *mahanyuv*; ज्युठु *zyuṭh*^{u}, or ज़िठु *ziṭh*^{u}, old, but both pronounced *zyuṭh*. On the other hand, in other cases, except the nominative, we have only *i*, pronounced as *i*]: thus; ज्युठु *zyuṭh*^{u}, old; acc. sg. ज़िठिस् *ziṭhis*; ag. sg. ज़िठि *ziṭh*^{i}; nom. pl. ज़िठि *ziṭh*^{i}; acc. pl. ज़िठ्यन् *ziṭhyan*; ag. pl. ज़िठ्यौ *ziṭhyau*.

Similarly, when the penultimate is *yū*, it becomes ī before *i-mātrā* or *is*, and ē in other cases, except the nom. sg. (77, 78); thus,—

Nom. sg. च्यून् *tsyūn*^{u}, a wall; acc. sg. चीनिस् *tsīnis*; gen. sg. चेन्युक् *tsēnyuk*^{u}; ag. sg. चीनि *tsīn*^{i}; instr. sg. चेनि सूतिन् *tsēni sūtin* (not *i-mātrā*); nom. pl. चीनि *tsīn*^{i}; acc. pl. चेन्यन् *tsēnyan*; ag. pl. चेन्यो *tsēnyau*.

[The word न्यून् *nyūl*^{u}, blue, however, has ī throughout. Thus, gen. sg. नील्युक् *nīlyuk*^{u}; instr. sg. नीलि सूतिन् *nīli sūtin*; acc. pl. नील्यन् *nīlyan*; ag. pl. नील्यो *nīlyau*.

So also in य्यूत् *yyūt*^{u}, how much; त्यूत् *tyūt*^{u}, so much; यूत् *yūt*^{u}, this much; change the यू *yū* to ī throughout (ii. iii. 27). Thus, यीति *yīt*^{i}, how many (nom. pl.); तीति *tīt*^{i}; ईति *īt*^{i}, pr. *yīt*^{i}.]

The ऊ *ū* in कूत् *kūt*^{u}, how many? (ii. iii. 25, 26) becomes कॅा *q̄*, in all cases except the nominative singular. In the obl. cases of the plural, it may optionally become ऐ *ai*. Thus—

	Singular.	Plural.
Nom.	कूत् *kūt*^{u}.	कॅाति *kq̄t*^{i}.
Acc.	कॅातिस् *kq̄tis*.	कॅात्यन् *kq̄tyan* or कैत्यन् *kaityan*.
Ag.	कॅाति *kq̄t*^{i}.	कॅात्यो *kq̄tyau* or कैत्यो *kaityau*.

Its fem. is कॅाच् *kq̄ts*^{a}.

The word कॅाह् *kq̄h*, or काँह् *kq̃h*, a certain person, is declined as a feminine ending in a consonant (ii. iii. 29).

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THIRD DECLENSION.

Feminine nouns ending in इ् *i-mātrā*, ऊ् *ū-mātrā*, or ञ़् *ñ*.

पूथि *pūth*^{i}, a book.

(*a*). Nouns ending in इ् *i-mātrā*.

Nom.	पूथि pūth^{i} (ii. i. 9).	पोथ्य pōthĕ (11, 33).
Acc.	पोथ्य pōthĕ (21, 33, 38, 40).	पोथ्यन् pōthyan (12, 38).
	पूथि *pūth*^{i} (39).	पोथ्य *pōthĕ* (39).
Gen.	पोथ्य ह॑न्दु *pōthĕ hạnd*^{u} (42).	पोथ्यन् ह॑न्दु *pōthyan hạnd*^{u} (42).
Loc. 1.	पोथ्य प्यठ् *pōthĕ pyăṭh*, &c. (52, 53).	पोथ्यन् प्यठ् *pōthyan pyăṭh* (52 53).
Dat. 1.	पोथ्य कितु *pōthĕ kyut*^{u} (54, 55).	पोथ्यन् कितु *pōthyan kyut*^{u} (54, 55).
Concom.	पोथ्य स॑ूतिन् *pōthĕ sụ̄tin* (60).	पोथ्यन् स॑ूतिन् *pōthyan sụ̄tin* (60).
Agent.	पोथि pōthi (6, 56).	पोथ्यौ pōthyau (56; i. 4).
Instr.	पोथि स॑ूतिन् *pōthi sụ̄tin* (33, 59).	पोथ्यौ स॑ूतिन् *pōthyau sụ̄tin* (59).
	पोथ्य हन्दि स॑ूतिन् *pōthĕ handi sụ̄tin* (61).	पोथ्यन् हन्दि स॑ूतिन् *pōthyan handi sụ̄tin* (61).
Loc. 2.	पोथि अन्द्र *pōthi andr*^{a} (57).	पोथ्यौ अन्द्र *pōthyau andr*^{a} (57).
Dat. 2.	पोथि पुछ़्य् *pōthi puṯshy* (63).	पोथ्यौ पुछ़्य् *pōthyau puṯshy* (33, 63).
	पोथ्य हन्दि पुछ़्य् *pōthĕ handi puṯshy* (63).	पोथ्यन् हन्दि पुछ़्य् *pōthyan handi puṯshy* (63).
Abl.	पोथि निश *pōthi niç*^{a} (65).	पोथ्यौ निश *pōthyau niç*^{a} (65).

Similarly are declined, ञ़ूरि *ñūr*^{i}, a hoof; खीति *khīt*^{i}, a field; चीरि *cīr*^{i}, a lottery ticket.

If the penultimate of a feminine word contains the vowel *ū*, that *ū* becomes *ō* in all cases except the nominative singular. Thus पूथि *pūth*^{i} a book; nom. pl. पोथ्य *pōthĕ* (33).

So also a penultimate *ī* becomes a *ē* in the same circumstance Thus खीति *khīt*^{i}, a field; nom. pl. खेत्य *khētĕ*. The word चीरि *cīr*^{i}, a lottery-ticket or slip, does not, however, change its long *ī*, and its nom. pl. is चीर्य *cīrĕ* (33).

(*b*). Nouns ending in ऊ *ū-mātrā*.

कूरू *kūr*^{ū}, a girl.

Nom.	**कूरू kūr^{ū} (ii. i. 9).**	**कोर्य kōrĕ (11, 30, 33).**
Acc.	**कोर्य kōrĕ (21, 33, 38, 40).**	**कोर्यन् kōryan (12, 30, 33, 38).**
	कूरू *kūr*^{ū} (39).	कोर्य *kōrĕ* (39).
Gen.	कोर्य ह॑न्दु *kōrĕ hạnd*^{u} (42).	कोर्यन् ह॑न्दु *kōryan hạnd*^{u}.
Loc. 1.	कोर्य प्यठ् *kōrĕ pyăṭh*, &c. (52, 53).	कोर्यन् प्यठ् *kōryan pyăṭh*, &c. (52, 53).
Dat. 1.	कोर्य कितु *kōrĕ kyut*^{u} (54, 55).	कोर्यन् कितु *kōryan kyut*^{u} (54, 55).
Concom.	कोर्य स॑तिन् *kōrĕ sạtin* (60).	कोर्यन् स॑तिन् *kōryan sạtin* (60).
Agent.	**कोरि kōri (6, 56).**	**कोर्यौ kōryau (56, 30; i. 4).**
Instr.	कोरि स॑तिन् *kōri sạtin* (6, 30, 59).	कोर्यौ स॑तिन् *kōryau sạtin* (33, 59).
	कोर्य हन्दि स॑तिन् *kōrĕ handi sạtin* (61).	कोर्यन् हन्दि स॑तिन् *kōryan handi sạtin* (61).
Loc. 2.	कोरि अन्द्र *kōri andr*^{a} (57).	कोर्यौ अन्द्र *kōryau andr*^{a} (57).
Dat. 2.	कोरि पुछ्य् *kōri putshy* (63).	कोर्यौ पुछ्य् *kōryau putshy* (63).
	कोर्य हन्दि पुछ्य् *kōrĕ handi putshy* (63).	कोर्यन् हन्दि पुछ्य् *kōryan handi putshy* (63).
Abl.	कोरि निश *kōri niç*^{a} (65).	कोर्यौ निश *kōryau niç*^{a} (65).

Similarly are declined पॅट्ठ *paṭʰ*, a tablet; हॅट्ठ *haṭʰ*, wood; काॅठ्ठ *kāṭʰ*, a stalk, especially the non-edible part of asparagus, sugarcane, &c.; बॅड्ड *baḍ*, a great woman; तॅञ्ञ *taña* (or तञ् *tañ*) a slender woman; लॅण्ड *laṇḍ*, a branch.

The final *ū-* becomes *i* (or *y*) throughout, except in the nom. sg. (30).

All nouns of this declension ending in ट्ठ *ṭʰ*, ठ्ठ *ṭh*, or ड्ड *ḍ*, change the consonant to the corresponding palatal, in all cases except the nominative singular. Thus—

Nom. sing.	Nom. pl.
पॅट्ठ *paṭʰ*.	पच्च *pacĕ*.
काॅठ्ठ *kāṭʰ*.	काच्च *kāchĕ*.
बॅड्ड *baḍ*.	बज्ज *bajĕ*.

This change only occurs when the word ends in *ū-mātrā* (22). It does not occur when it ends in a consonant (26).

If the penultimate of a feminine word contains the vowel *ū*, that *ū* becomes *ō* in all cases except the nom. singular, thus कूर् *kūr*, a girl, nom. pl. कोर्यं *kōrĕ* (33).

The following are exceptions and do not change the *ū* (35). तूर् *ṭūr* cold; दूर् *dūr*, a lane; मूर् *mūr*, a twig. Thus from तूर् *ṭūr*; nom. pl. तूर्यं *ṭūrĕ*.

So also a penultimate *ī* becomes *ē* in the same circumstances. Thus, सीर् *sīr*, a brick, nom. pl. सेर्यं *sērĕ*. The following words (33) however, do not change,—

गीर् *gīr*, red-chalk.	Nom. pl. गीर्यं *girĕ*.
गीद् *gīd*, child's excrement.	गीज्ज *gīdĕ*.
टीठ् *ṭīṭʰ*, pride.	टीच्च *ṭīchĕ* (22).
टीर् *ṭīr*, cold-boiled-rice-pudding.	टीर्यं *ṭīrĕ*.
पीर् *pīr*, a table.	पीर्यं *pīrĕ*.

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Whenever in this declension *ū-mātrā* is preceded by *a* or *ā*, the *a* or *ā* become modified to *ạ* or *ạ̄* respectively (70). Thus,

Base पट् *paṭ*, a tablet; nom. sg. प॑टू *pạṭᵘ*, but acc. sg. पच्य *pacyĕ*; ag. sg. पचि *paci* (*i* fully pronounced,—not *i-mātrā*); nom. pl. पच्य *pacĕ*; acc. pl. पच्यन् *pacyan*; ag. pl. पच्यौ *pacyau*.

So,—Base माज् *māj*, a mother; nom. sg. मा॑जू *mạ̄jᵘ*; but acc. sg. माज्य *mājĕ*.

Again; Base, काठ् *kāṭh*, wood; nom. sg. का॑ठू *kạ̄ṭhᵘ*; acc. sg. काठ्य *kāchĕ*.

(*c*). Nouns ending in ञ़् *ñ*.

Similarly are declined all feminine nouns in ञ् *ñ*, thus म्या॑ञ् *myạ̄ñ*, mine (fem.).

	Singular.	Plural.
Nom.	म्या॑ञ़् *myạ̄ñ*.	म्याञ़ *myāñĕ*.
Acc.	म्याञ़ *myāñĕ*.	म्याञ़न् *myāñan*.
Ag.	म्याञ़ि *myāñi*.	म्याञ़ौ *myāñau*.

The vowel is only modified in the nom. sing. So also च्या॑ञ़् *cyạ̄ñ* thine (fem.); सा॑ञ़् *sạ̄ñ*, our (fem.) (ii. iii. 11 and ff).

As the semivowel य *ya* cannot, as a rule, immediately follow च़् *ts*, छ़् *tsh*, or ज़् *z*, when a noun ends in च़ू *tsᵘ*, छ़ू *tshᵘ*, or ज़ू *zᵘ*, the य *ya* is elided in declension. Thus म॑च़ू *mạtsᵘ*, mad, (feminine): nom. pl. मच़ *matsᵃ*, not मच्य़ *matsĕ*. क्व॑छ़ू *kwạtshᵘ*, a small bag: pl. क्वछ़ *kŏtsᵃ*. ब्वर्ज़ू *wŏrᵃzᵘ*, a woman who has married twice, pl. ब्वर्ज़ *wŏrᵃzᵃ*. (iv. 51). The य *ya* is, however, retained in the singular. Thus the acc. sg. is मच्य़ *matsĕ*, क्वछ्य़ *kŏtshĕ*, and ब्वर्ज़्य *wŏrᵃzĕ*.

Fourth Declension.

Nouns ending in अ *a*, or a consonant.

(*a*). Nouns ending in अ *a*

ब्यञ़ *bĕñĕ*, a sister.

Nom.	ब्यञ़ **bĕñĕ** (ii. i. 1).	ब्यञ़ **bĕñĕ** (1).
Acc.	ब्यञ़ **bĕñe** (38, 40, 39).	ब्यञ़न् **bĕñan** (38). ब्यञ़ *bĕñĕ* (39).
Gen.	ब्यञ़ ह॑न्दु *bĕñĕ hạnd*ᵘ (42).	ब्यञ़न् ह॑न्दु *bĕñan hạnd*ᵘ (42).
Loc. 1.	ब्यञ़ प्यठ् *bĕñĕ pyăṭh* (52, 53).	ब्यञ़न् प्यठ् *bĕñan pyăṭh*, &c. (52, 53).
Dat. 1.	ब्यञ़ कितु *bĕñĕ kyut*ᵘ (54, 55).	ब्यञ़न् कितु *bĕñan kyut*ᵘ (54, 55).
Concom.	ब्यञ़ सू॑तिन् *bĕñe sụ̄tin* (60).	ब्यञ़न् सू॑तिन् *bĕñan sụ̄tin* (60).
Agent.	ब्यञ़ि **bĕñi** (56; i. 4).	ब्यञ़ौ **bĕñau** (56, i. 4).
Instr.	ब्यञ़ि सू॑तिन् *bĕñi sụ̄tin* (59).	ब्यञ़ौ सू॑तिन् *bĕñau sụ̄tin* (59).
	ब्यञ़ हन्दि सू॑तिन् *bĕñĕ handi sụ̄tin* (61).	ब्यञ़न् हन्दि सू॑तिन् *bĕñan handi sụ̄tin* (61).
Loc. 2.	ब्यञ़ि अन्द्र *bĕñi andr*ᵃ (57).	ब्यञ़ौ अन्द्र *bĕñau andr*ᵃ (57).
Dat. 2.	ब्यञ़ि पुछ्य् *bĕñi putshy* (63).	ब्यञ़ौ पुछ्य् *bĕñau putshy* (63).
	ब्यञ़ हन्दि पुछ्य् *bĕñĕ handi putshy*.	ब्यञ़न् हन्दि पुछ्य् *bĕñan handi putshy* (63).
Abl.	ब्यञ़ि निश *bĕñi niç*ᵃ (65).	ब्यञ़ौ निश *bĕñau niç*ᵃ (65).

(*b*). Nouns ending in a consonant.

माल् *māl*, a garland.

Nom.	माल् māl (ii. i. 10).	माल māl[a] (11).
Acc.	मालि māli (37, 38, 40).	मालन् mālan (12, 38).
	माल् *māl* (39).	माल *māl*[a] (39).
Gen.	मालि ह़ंद् *māli hạnd*[a] (42).	मालन् ह़ंद् *mālan hạnd*[a] (42).
Loc. 1.	मालि प्यठ् *māli pyăṭh*, &c., (52, 53).	मालन् प्यठ् *mālan pyăṭh*, &c., (52, 53).
Dat. 1.	मालि कित् *māli kyut*[a] (54, 55).	मालन् कित् *mālan kyut*[a].
Concom.	मालि स़ूंतिन् *māli sūtin* (60).	मालन् स़ूंतिन् *mālan sūtin* (60).
Agent.	मालि māli (56).	मालौ mālau (56).
Instr.	मालि स़ूंतिन् *māli sūtin* (59).	मालौ स़ूंतिन् *mālau sūtin* (59).
	मालि छन्दि स़ूंतिन् *māli handi sūtin* (61).	मालन् छन्दि स़ूंतिन् *mālan handi sūtin* (61).
Loc. 2	मालि अन्द्र *māli andr*[a] (57).	मालौ अन्द्र *mālau andr*[a] (57).
Dat. 2	मालि पुछ् *māli puṯshy* (63).	मालौ पुछ् *mālau puṯshy* (63).
	मालि छन्दि पुछ् *māli handi puṯshy* (63).	मालन् छन्दि पुछ् *mālan handi puṯshy* (63).
Abl.	मालि निश़ *māli niç*[a] (65).	मालौ निश़ *mālau niç*[a] (65).

Similarly are declined क्रक् *krak*, a loud noise; नारिज़् *nārij*, a conduit; ज़ंग् *zaṅg*, a thigh.

Note that when a noun ends in क् *k*, च् *c*, च़् *ʦ*, ट् *ṭ*, त् *t* or प् *p*, these letters are aspirated in the nom. sing. (66, 67) ; thus—

	Nom. sg.	but Nom. pl.
क्रक् *krak*, a loud noise.	क्रख् *krăkh*.	क्रक *krak*ª.
रच् *raʦ*, abrus precatorius.	रछ् *răʦh*.	रच् *raʦ*ª.
ऋच् *ṛʦ*, a sub-caste.	ऋछ् *ṛʦh*.	ऋच् *ṛʦ*ª.
नट् *naṭ*, trembling.	नठ् *năṭh*.	नट *naṭ*ª.
वत् *wat*, a road.	वथ् *wăth*.	वत *wat*ª.
च़ाप् *ʦāp*, food.	च़ाफ् *ʦāph*.	च़ाप *ʦāp*ª.

The aspiration, being at the end of a word, is barely audible, but it affects the preceding vowel. It only occurs in the nominative singular.

This aspiration does not occur if a final त् *t* or च़् *ʦ* forms part (either the first or second member) of a compound consonant (even when a short *a* is inserted to aid pronunciation) (68) : thus ;—

	Nom. sg.
बत्च् *batªc*, a duck.	बत्च् *batªc* (elsewhere spelled बत्चू *batªcª*, see p. 32).
ब्वक़्च़् *bŏkªʦ*, a female puppy.[1]	ब्वक़्च़् *bŏkªʦ*.
मक़्च़् *makªʦ*, an axe.	मक़्च़् *makªʦ*.
नस्त् *nast*, nose.	नस्त् *nast*.

Other compounds are, however, aspirated. Thus,—

	Nom. sg.	Nom. pl.
रेम्प् *rēmp*, a little.	रेम्फ् *rēmph*.	रेम्प *rēmpª*.
च़ाम्प् *ʦāmp*, consolation.	च़ाम्फ् *ʦāmph*.	च़ाम्प *ʦāmpª*.

The word ज़ाम् *zām*, a husband's sister, is irregular (71). In all cases, except the nominative singular, it becomes ज़ोम् *zōm*, and drops every vowel in the terminations. Thus ; acc. sg. ज़ोम् *zōm* ; ag. sg.

1 So Içvara-kaula. Mr. H. Knowles informs me that this word means the young of any animal.

ज़ोम् *zōm*; nom. pl. ज़ोम् *zōm*; acc. pl. ज़ोमन् *zōm°n*; ag. pl. ज़ोमव् *zōm°v*; instr. sg. ज़ोम् सूतिन् *zōm sūtin*; gen. sg. ज़ोम् हंद् *zōm hạnd°*, &c.

The word मूंष् *mũṣ* (ii. iii. 28), a buffalo-cow, changes ऊ *ū* to *ai* in all cases except the nom. sg., thus—

	Singular.	Plural.
Nom.	मूंष् *mũṣ*.	मैंष *maĩṣ°*.
Acc.	मैंषि *maĩṣi*.	मैंषन् *maĩṣan*.
Ag.	मैंषि *maĩṣi*.	मैंषो *maĩṣau*.

The word कूंह् *kũh* or कांह् *kãh*, any one, some one, though of both genders, is always declined as a feminine, in the sg. number. It changes ऊ *ū* and आ *ā* to ऐ *ai* and ह् *h* to ष् *ṣ* in all cases except the nom. sg. (ii. iii. 29). It becomes केन्च् *kēnʦ* in the plural (ii. iii. 30) and is then declined as a masculine.

Thus,—

	Singular.	Plural.
Nom.	कूंह् *kũh*, कांह् *kãh*.	केन्च् *kēnʦ*.
Acc.	कैंषि *kaĩṣi*.	केन्चन् *kēnʦan*.
Ag.	कैंषि *kaĩṣi*.	केन्चो *kēnʦau*.

(*c*). Irregular Feminine Nouns, ending in Consonants.

रात् *rāt*, night.

Nom.	राथ् **rāth** (ii. i. 10, 66).	रा॑च़ू **rāṭs̱ᵘ** (16, 23).
Acc.	रा॑च़ू **rāṭs̱ᵘ** (16, 23, 38, 40).	रा॑च़ून् **rāṭs̱ᵘn** (14, 16, 23, 38).
	राथ् *rāth* (39).	रा॑च़ू *rāṭs̱ᵘ* (39).
Gen.	रा॑च़ू ह॑न्दु *rāṭs̱ᵘ hạndᵘ* (42).	रा॑च़ून् ह॑न्दु *rāṭs̱ᵘn hạndᵘ* (42).
Loc. 1.	रा॑च़ू मञ्ज़् *rāṭs̱ᵘ manz*, &c. (52, 53).	रा॑च़ून् मञ्ज़् *rāṭs̱ᵘn manz*, &c. (52, 53).
Dat. 1.	रा॑च़ू कितु *rāṭs̱ᵘ kyutᵘ* (54, 55).	रा॑च़ून् कितु *rāṭs̱ᵘn kyutᵘ* (54, 55)
Concom.	रा॑च़ू सू॑तिन् *rāṭs̱ᵘ sụ̄tin* (60).	रा॑च़ून् सू॑तिन् *rāṭs̱ᵘn sụ̄tin*.
Agent.	रा॑च़ू **rāṭs̱ᵘ** (7, 17).	रा॑च़ूव् **rāṭs̱ᵘv** (20, 56).
Instr.	रा॑च़ू सू॑तिन् *rāṭs̱ᵘ sụ̄tin* (59).	रा॑च़ूव् सू॑तिन् *rāṭs̱ᵘv sụ̄tin* (59).
	रा॑च़ू हन्दि सू॑तिन् *rāṭs̱ᵘ handi sụ̄tin* (61).	रा॑च़ून् हन्दि सू॑तिन् *rāṭs̱ᵘn handi sụ̄tin* (61).
Loc. 2.	रा॑च़ू अन्द्र *rāṭs̱ᵘ andrᵃ* (57).	रा॑च़ूव् अन्द्र *rāṭs̱ᵘv andrᵃ*.
Dat. 2.	रा॑च़ू पुछ़्य् *rāṭs̱ᵘ puṭshy* (63).	रा॑च़ूव् पुछ़्य् *rāṭs̱ᵘv puṭshy* (63).
	रा॑च़ू हन्दि पुछ़्य् *rāṭs̱ᵘ handi puṭshy* (63).	रा॑च़ून् हन्दि पुछ़्य् *rāṭs̱ᵘn handi puṭshy* (63).
Abl.	रा॑च़ू निश *rāṭs̱ᵘ niçᵃ* (65).	रा॑च़ूव् निश *rāṭs̱ᵘv niçᵃ* (65).

This group of irregular nouns consists of most feminine nouns in त् *t*, थ् *th*, द् *d*, न् *n*, ह् *h*, and certain nouns in ल् *l*. In all these cases the final consonant is changed as follows:—

त्	*t*	becomes	च़् *ʦ*
थ्	*th*		च़्ह् *ʦh*
द्	*d*		ज़् *z*
न्	*n*		ञ् *ñ*
ह्	*h*		ग् *ɣ*
ल्	*l*		ज् *j*

e.g., रात् *rāt*, night; Nom. pl. राच़ू *rāʦ*[a] (23, 14, 16).

काथ् *kŏth*, a hank; काच़्हू *kwaʦh*[a] (23, 14, 16).

पन्द् *grand*, a counting; पंज़ू *grənz*[a] (23, 14, 16).

ईरन् *yīran*, an anvil; ईरञू *īrañ*[a] (23, 14, 16).

काह् *kāh*, eleventh lunar day; कांगू *kāç*[a] (19, 14, 16).

वाल् *wāl*, a hole; वांजू *wāj*[a] (27, 14, 16).

Other examples are सत् *sat*, hope; हान् *hān*, loss; चामन् *ʦāman*, cheese.

The words in ल् *l* which follow this declension are वाल् *wāl*, a hole (as that of a serpent); साल् *sāl*, a wife's sister; ज़ाल् *zāl*, a net; कल् *kal*, thought, consideration; and हाल् *hāl*, a house, a hall (27, 28). The word हाल् *hāl* when it is at the end of a *masculine* compound is, however, declined regularly; thus चाटहालस् अन्दर् *ʦāṭahālas andar* (not चाटहांजू अन्दर *ʦāṭahājᵃ andar*,) in the school-house, because चाटहाल् *ʦāṭahāl* is masculine (28). The words कुंडल् *kuṇḍal*, a kind of cup (especially the cup of a portable stove), and कर्तल् *kartal* a sword, may optionally be regular. Thus कुंडजू सूतिन् *kuṇḍajᵃ sūtin* or कुंडलि सूतिन् *kuṇḍali sūtin*, by the cup, (29).

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Exceptions. The following nouns are however declined regularly (24, 25):—

वत् *wat*, a road.

लत् *lat*, a kick.

दत् *dat*, a clod.

थ्वत् *thŏt*, an impediment.

च़त् *tsŏt*, the anus.

चित्त् *tsitt*, a sprain.

च़ेंत् *tsēt*, tumbling head over heels.

ग़त् *g*ᵃ*t*, a rise in a river, a swift flood.

पैंत् *pīt*, a trifle.

तोंत् *tōt*, a beak.

कथ् *kăth*, a story.

व्यथ् *vyăth*, the river Jhelum.

ख्वन् *khŏn*, the elbow.

तन् *tan*, the body.

नान् *nān*, the navel.

स्वन् *sŏn*, a co-wife.

हन् *han*, a little.

बन् *ban*, a heap, pile.

Thus वति स़ूतिन् *wati sụ̄tin*, not वच़ू स़ूतिन् *wạts*ᵃ *sụ̄tin*.

It must be remembered that the *ū-mātrā* modifies a preceding *a* to *ạ*, and *ā* to *ạ̄* (71). When final it is not pronounced. When it precedes a consonant it is pronounced like a short German *ü*. Thus रांच़ूव् *rạ̄ts*ᵃ*v* is pronounced something like, German, *rötsüv*.

It must also be remembered that words ending in *t* form the nominative singular in *th* (66). Thus the nom. sg. of रात् *rāt*, night, is राथ् *rāth*, and of वत् *wat*, a road, is वथ् *wath*.

The words यड् *yaḍ*, belly; गाव् *gāv*, a cow; थर् *thar*, the back; कठ्

kŏṭh, a fragrant root, *Aucklandia Costus*; वड् *waḍ*, discount; are similarly declined, except that they do not change their final consonant. Thus य॑ड़ू स्॑तिन् *yạḍᵘ sạ̄tin*, by the belly (7). Nom. pl. य॑ड़ू *yạḍᵘ* (17).

The words खार् *khār*, an ass's load, a certain measure; मार् *mār*, the name of a river; सार् *sār*, a cross-beam, for strengthening; राश् *rāç*, stock-in-trade; follow the same rule. *E.g.*, nom. pl. खा॑रू *khạ̄rᵘ* (18). [*Sūtra* 18, apparently only refers to the plural. But the singular follows the same rule, *e.g.*, खा॑रू स्॑तिन् *khạ̄rᵘ sạ̄tin*, by the measure].

The word गाव् *gāv*, abovementioned, changes its *ā* to *ō* in all cases except the nom. sg. (72); thus, acc. sg. गोव़ू *gōvᵘ*; ag. sg. गोव़ू *gōvᵘ*; nom. pl. गोव़ू *gōvᵘ*; acc. pl. गोव़ून् *gōvᵘn*; ag. pl. गोव़ूव् *gōvᵘv*.

E. Composition and Concordance.

Īçvara-kaula, in his *Kāçmīra-çabdāmṛta*, treats of the two subjects forming the title of this section, in the *Samāsa-prakriyā*, the third portion of his grammar. He treats an adjective in concord with a noun as an example of a *karmadhāraya*, or adjectival compound. Really, as will be seen, it is not a compound at all, but an instance of syntactical agreement. Just as *bonus homo*, in Latin means a good man, and *boni hominis*, of a good man, so *bạḍᵘ lạrᵘ*, in Kāçmīrī means a large house, and *baji lari pyaṭhᵃ*, means from a great house.

In the case of all compounds and concordances the postposition denoting the case is omitted after every member of the compound, except the last, but each member is inflected as if to receive the postposition (iii. 2). Thus, छ॑तु गुरु् *chạtᵘ gurᵘ* means, a white horse. The instrumental plural of छ॑तु *chạtᵘ* is छत्यौ स्॑तिन् *chatyau sạ̄tin*, and of गुरु् *gurᵘ* is गुर्यौ स्॑तिन् *guryau sạ̄tin*, but the instrumental plural of छ॑तु गुरु् *chạtᵘ gurᵘ*, is छत्यौ गुर्यौ स्॑तिन् *chatyau guryau sạ̄tin*, not छत्यौ स्॑तिन् गुर्यौ स्॑तिन् *chatyau sạ̄tin guryau sạ̄tin*, by white horses. When there is no postposition these remarks, of course, do not apply. Thus the accusative singular is छतिस् गुरिस् *chatis guris*, and the nom. pl. is छ॑ति गुरि *chạtⁱ gurⁱ*.

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Karmadhāraya or adjectival compounds are expressed in Kāçmīrī by an adjective agreeing with its substantive in gender, number and case. The above rule about postpositions must be applied. Thus बॅडु द्यार् *bạḍᵘ dyār* (masc.), great wealth; बद्यन् द्यारन् छुह् ज़ेनान् *baḍyan dyāran chuh zēnān*, he is earning great wealth (acc. pl.); म्वचि च़चि सूॅतिन् *mŏci tsŏci sūtin*, by a thick (म्वॅटु *moṭᵘ*) cake (च़टू *tswạṭᵘ*, fem.); त्रिछि कोरि पुछ्य् *trichi kōri putshy*, for a clever (त्र्युखु *tryukhᵘ*, fem. त्रिछू *trichᵘ*) girl (कूरु *kūrᵘ*); बजि लरि प्यठ *baji lari pyaṭhᵃ* from the big (बॅडु *bạḍᵘ*) house (लॅरु *lạrᵘ*); बज्य ग्रॅञ्जू हॅन्दु *bajĕ grạnzᵘ hạndᵘ*, of the big counting (ग्रन्द् *grand*); बडिस् गुरिस् प्यठ् *baḍis guris pyăṭh*, on the great horse (गुरु *gurᵘ*). And so on.

In **Copulative** (*dvandva*) compounds each member of the compound is declined separately, the above rule as to post-positions being observed. Thus, base ताप् *tāp*, light (masc.); गट *gaṭᵃ*, darkness (fem.). The nom. sg. of ताप् *tāp* is ताफ् *tāph* and the instr. sg. is ताप सूॅतिन् *tāpᵃ sūtin*. So from गट *gaṭᵃ*, the nom. sg. is गट *gaṭᵃ*, and the instr. sg. गटि सूॅतिन् *gaṭi sūtin*. The compound noun, 'light and darkness' is nom. sg. ताफ् गट *tāph-gaṭᵃ*; instr. sg. ताप-गटि सूॅतिन् *tāpᵃ-gaṭi sūtin*, and so on. Again वॉरु *wạ̄rᵘ* (fem.) is a garden; कुलु *kulᵘ* (masc.) is a tree; फल् *phal* (masc.) is fruit; and ज़ल् *zal* (masc.) is water. Making these into a copulative compound we have in the dative sg. वारि-कुलि-फल-ज़ल पुछ्य् *wāri-kuli-phalᵃ-zalᵃ putshy*, for the garden, the tree, the fruit, and the water. Sometimes each member is put in the plural, the whole collective idea being plural though each member of the compound is properly in the singular. Thus मॉजू *mạ̄jᵘ*, a mother, nom. pl. माज्य *mājĕ*; कूरु *kūrᵘ*, a daughter, nom. pl. कोर्य *kōrĕ*. Hence माज्य-कोर्य *mājĕ-korĕ*, mother and daughter. So मॉलि पुथ्र् *mạ̄lⁱ-puthᵃr*, father and son (मोलु *mōlᵘ*, a father; पुथ्र् *puthᵃr*, a son); हश-न्वष *haçᵃ-nŏṣᵃ*, mother-in-law (हश् *haç*) daughter-in-law (न्वष् *nŏṣ*); ज़ोम्-काकञ *zōm-kākañĕ*, husband's sister (ज़ाम् *zām*) and brother's wife (काकॅञ् *kākạñ*); पच्य-कूच्य *pacĕ-kūcĕ*, board (षॅटू *pạṭᵘ*) and wood (कूटू *kūṭᵘ*).

In **Tatpuruṣa** or appositional compounds, the first member usually takes the form which the word adopts in the agent, the न् *n* of the agent of the 1st declension, being dropped. We may also say that the first member of the compound is put in the genitive, the post-position being dropped, and *y* being changed to *i* (iii. 5).

Thus, श्राकि-खश् *çrāki-khaç*, the cut of a knife (श्राख् *çrākh*, fem.).

टोपि-फ॑लु *ṭōpi-phạlᵘ*, the border of a cap (टूपि *ṭūpⁱ*, fem.).

सर्प-बय स॑तिन् *sarᵃpᵃ-bayᵃ sạ̄tin*, by the fear (बय *bayᵃ*, masc.) of a snake (सर्फ् *sarᵃph*, masc.).

राज़-न्यचिवि पुछ्य् *rāzᵃ-nĕcivi putshy*, for the son (न्यच्युवु *nĕcyuvᵘ*) of the king (राज़् *rāzᵃ*).

बट-कोर्य हन्दु *baṭᵃ-kōrĕ hạndᵘ*, of the daughter (कुरु *kūrᵘ*) of the brāhmaṇa (बट *baṭᵃ*).

स्वन-डब अन् *sŏnᵃ-ḍabᵃ an*, bring the box (डब *ḍabᵃ*, masc.) of gold (स्वन् *sŏn*, masc.), *i.e.*, the gold box.

म्यचि-फ़॑तु थव् *mĕtsi-photᵘ thav*, put down a basket (फ़॑तु *photᵘ* masc.) (full) of earth (म्य॑चू *myạtsᵘ*).

Irregular formations.

1. When the word पोञु *pōñᵘ*, water, forms the second member of one of these compounds, it becomes वोञु *wōñᵘ* (iii. 6). Thus,—

गंग-वोञु *gaŋgᵃ-wōñᵘ*, the water of the Ganges.

व्यथ-वोञु *vyathᵃ-wōñᵘ*, the water of the Jhelum.

शीन-वोञु *çīnᵃ-wōñᵘ*, snow-water.

वुग-वोञु *wugᵃ-wōñᵘ*, flood-water.

मा॑रु-वोञु *mạ̄rᵘ-wōñᵘ*, the water of the Mār [see p. 67].

क्रीरि-वोञु *krīrⁱ-wōñᵘ*, well (क्र्यूरु *kryūrᵘ*, masc.) water.

रूद-वोञु *rūdᵃ-wōñᵘ*, rain-water.

नाग-वोञु *nāgᵃ-wōñᵘ*, spring-water.

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2. The words पोञु *pōñ*^{u}, water, दाञ *dāñĕ* (masc.) rice, वोञु *wōñ*^{u}, a merchant, and others, become पाँ *pā̃*, दाँ *dā̃*, and वाँ *wā̃* respectively, when (iii. 7, 8) they are first members of one of these compounds.

Thus,—

पाँ-त्रख् *pā̃-trăkh*, a measure (4¾ sērs) of water.

पाँ-नटु *pā̃-nạṭ*^{u}, a water-bucket.

दाँ-खार् *dā̃-khār*, a measure (16 *trăkhs*) of rice.

दाँ-फ़ॊतु *dā̃-phot*^{u}, a basket (full) of rice.

वाँ-द्यॊलु *wā̃-dyạl*^{u}, the merchant's straw.

वाँ-कूरु *wā̃-kūr*^{u}, the merchant's daughter.

3. The प *p* of the word पॊथ्र् *pạth*^{a}*r*, a leaf, becomes व *w* in masculine compounds (iii. 9). Thus,—

बोञि-वॊथ्र् *bōñi-wạth*^{a}*r*, plane-tree-leaves.

पोष-वॊथ्र् *pōṣ*^{a}*-wạth*^{a}*r*, a flower-petal.

ख्यल-वॊथ्र् *khyall*^{a}*-wạth*^{a}*r*, a leaf of the lotus-grass.

हाक-वॊथ्र् *hāk*^{a}*-wạth*^{a}*r*, spinach-leaves.

When, however, the compound is feminine, the word पॊथ्र् *pạth*^{a}*r*, becomes पॊत्र् *pạt*^{a}*r*. Thus

मुजि पॊत्र् *muji-pạt*^{a}*r* (fem.), a radish-leaf.

ग्वग्जि-पॊत्र् *gŏg*^{a}*ji-pạt*^{a}*r* (fem.), a turnip-leaf.

4. The word च़ॊटू *ts̱wạṭ*^{u}, a cake (fem.), is restricted in composition to cakes made of grain (iii. 12). Thus

त्रम्ल-च़ॊटू *tŏm*^{a}*l*^{a}*-ts̱wạṭ*^{u}, rice-cake.

कन्क-च़ॊटू *kan*^{a}*k*^{a}*-ts̱wạṭ*^{u}, wheat-cake.

वुष्कि-च़ॊटू *wuṣki-ts̱wạṭ*^{u}, barley-cake.

If not made of grain, the word म्वॊण्डू *mwạṇḍ*^{u}, must be substituted.

Thus

ठूल-म्वंडू *ṭhūlᵃ-mwạṇḍᵘ*, egg-cake.

नंद्रि-म्वंडू *nạdᵃrⁱ-mwạṇḍᵘ*, lotus-stalk-cake.

च़ामंञ़ू म्वंडू *tsāmạñᵘ-mwạṇḍᵘ* (also written, च़ामंञ़् *tsāmañ-*), cheese-cake.

अद्रक्-म्वंडू *adrak-mwạṇḍᵘ*, ginger-cake [apparently irregular].

The masculine form म्वंडु *moṇḍᵘ*, can, however, be used for grain cakes, thus

त्वम्ल-म्वंडु *tŏmᵃlᵃ-moṇḍᵘ*, rice-cake, (त्वमुल् *tŏmul*, rice).

अब-म्वंडु *abᵃ-moṇḍᵘ*, a cake of parched meal.

Bahu-vrīhi or relative compounds are similarly formed. When formed of an adjective and a substantive, the adjective is usually put last (iii. 13). Examples are

यड-बंडु *yaḍᵃ-bạḍᵘ* (not यंडू-बंडु *yạḍᵘ-bạḍᵘ*, as we might expect), big-bellied, Skr. *bṛhad-udara*, quasi *udara-bṛhat*.

दारि-ज़्यूठु *dāri-zyūṭhᵘ*, long (ज़्यूठु *zyᵘṭhᵘ*) bearded (दांरु *dạ̄rᵘ*, fem., a beard).

कन-च़ंटु *kanᵃ-tsoṭᵘ* having the ear (कन् *kan*, masc.) cut (च़ंटु *tsoṭᵘ*).

हूनि-बुथु *hūnⁱ-buthᵘ*, dog (हूनु *hūnᵘ*, a dog) faced (बुथु *buthᵘ*, a face).

When one member of the compound is a numeral, it is put first, thus

दु-वहंरु *du-wahạrᵘ*, occurring every two years.

सत-बोच़ु *satᵃ-bōtsᵘ*, having a family of seven.

पांच़-प्वतुर् *pạ̄tsᵃ-potur*, having five sons.

Alliterative compounds (which are always feminine) are also classed as *bahu-vrīhis* by Īçvara-kaula (iii. 14); thus

ठ्वल-ठ्वल् *ṭhŏlᵃ-ṭhŏl*, mutual pushing with horns.

टप-टफ् *ṭapᵃ-ṭăph*, mutual kicking.

ठूंक ठूंख् *ṭhũkᵃ-ṭhũkh*, mutual pushing with horns.

चप-चफ् *capᵃ-căph*, tooth against tooth.

When an adjective is used as an adverb, its form is not changed (v. 5). It stands in the masculine singular.

Thus,—

ग्वंदु ग्वंदु छुह् पकान् *gobᵘ gobᵘ chuh pakān*, he is going slowly.

च़ुतुर् (or च़ुतुर् च़ुतुर्) ख्यवान छुह् *ʦaṭur* (or *ʦaṭur ʦaṭur*) *khyawān chuh*, he is eating quickly.

ल्वतु करान् छुह् *lotᵘ karān chuh*, he is doing slowly.

F. Numerals.

The following are the Kāçmīrī numerals from one to ten millions, as written down for me by my Paṇḍit. They differ in several respects from those given by Wade.

Cardinals.	Ordinals.
1 अख् *ăkh.*	अक्युम् *akyumᵘ* or ग्वडञुक् *gŏdañukᵘ*.
2 ज़ुह् *zᵒh.*	दुयुम् *dŏyumᵘ*.
3 त्रिह् *trih* or त्रह् *trĕh.*	त्रयुम् *trĕyumᵘ*.
4 च़ोर् *ʦōr.*	च़ूर्यम् *ʦūryumᵘ*.
5 पांच़् *pāṇʦ* or पान्च़् *pāṇʦ.*	पूंच़्युम् *pāṇʦyumᵘ*.
6 शह् *ṣah.*	शयुम् *ṣayumᵘ*.
7 सथ् *săth.*	सत्युम् *satyumᵘ*.
8 ऐठ् *aiṭh.*	ऐठ्युम् *aiṭhyumᵘ*.
9 नव् *nav.*	नव्युम् *navyumᵘ*.
10 दह् *dah.*	दह्युम् *dahyumᵘ*.
11 कांह् *kāh.*	कांह्युम् *kāhyumᵘ*.
12 बाह् *bāh.*	बांह्युम् *bāhyumᵘ*.
13 त्रुवाह् *truwāh.*	त्रुवांह्युम् *truwāhyumᵘ*.
14 च़्दाह् *ʦŏdāh.*	च़्दांह्युम् *ʦŏdāhyumᵘ*.
15 पन्दाह् *pandāh.*	पन्दांह्युम् *pandāhyumᵘ*.

16 शुराह् *ṣurāh.*	शुराह्युम् *ṣurā́hyum°.*
17 सदाह् *sadāh.*	सदाह्युम् *sadā́hyum°.*
18 अरदाह् *aradāh.*	अरदाह्युम् *aradā́hyum°.*
19 कुनवुह् *kunawuh.*	कुनवुह्युम् *kunawuhyum°.*
20 वुह् *wuh.*	वुह्युम् *wuhyum°.*
21 अकवुह् *akawuh.*	अकवुह्युम् *akawuhyum°.*
22 ज़तोवुह् *z°tōwuh.*	ज़तोवुह्युम् *z°tōwuhyum°.*
23 त्रुवुह् *trĕwuh.*	त्रुवुह्युम् *trĕwuhyum°.*
24 च्वुह् *ʦŏwuh.*	च्वुह्युम् *ʦŏwuhyum°.*
25 पूंन्चूह् *pūnʦ°h.*	पूंन्चूह्युम् *pūnʦ°hyum°.*
26 शवुह् *ṣawuh.*	शवुह्युम् *ṣawuhyum°.*
27 सतोवुह् *satōwuh.*	सतोवुह्युम् *satōwuhyum°.*
28 ऐठोवुह् *aiṭhōwuh.*	ऐठोवुह्युम् *aiṭhōwuhyum°.*
29 कुनत्रह् *kunatr°h.*	कुनत्रह्युम् *kunatr°hyum°.*
30 त्रह् *tr°h.*	त्रह्युम् *tr°hyum°.*
31 अकत्रह् *akatr°h.*	अकत्रह्युम् *akatr°hyum°.*
32 दयत्रह् *dŏyatr°h.*	दयत्रह्युम् *dŏyatr°hyum°.*
33 त्ययत्रह् *tĕyatr°h.*	त्ययत्रह्युम् *tĕyatr°hyum°.*
34 च्यत्रह् *ʦŏyatr°h.*	च्यत्रह्युम् *ʦŏyatr°hyum°.*
35 पांन्चत्रह् *pā́nʦatr°h* or पान्चत्रह् *pānʦatr°h.*	पांन्चत्रह्युम् *pā́nʦatr°hyum°.*
36 शयत्रह् *ṣayatr°h.*	शयत्रह्युम् *ṣayatr°hyum°.*
37 सतत्रह् *satatr°h.*	सतत्रह्युम् *satatr°hyum°.*
38 अरत्रह् *aratr°h.*	अरत्रह्युम् *aratr°hyum°.*
39 कुनताजिह् *kunatā́jih.*	कुनताजिह्युम् *kunatā́jihyum°.*
40 च्तजिह् *ʦatajih.*	च्तजिह्युम् *ʦatajihyum°.*

41 अकताजिह् *akatā̤jih.*	अकता॒जिह्युम् *akaṭā̤jⁱhyumᵘ.*[1]
42 द्वयताजिह् *dŏyatā̤jih.*	द्वयता॒जिह्युम् *dŏyatā̤jⁱhyumᵘ.*
43 त्ययताजिह् *tĕyatā̤jih.*	त्ययता॒जिह्युम् *teyatā̤jⁱhyumᵘ.*
44 च़यताजिह् *t̤sŏyatā̤jih.*	च़यता॒जिह्युम् *t̤sŏyatā̤jⁱhyumᵘ.*
45 पान्च़ताजिह् *pā̤nt̤satā̤jih.*	पान्च़ता॒जिह्युम् *pā̤nt̤satā̤jⁱhyumᵘ.*
46 षयताजिह् *ṣayatā̤jih.*	षयता॒जिह्युम् *ṣayatā̤jⁱhyumᵘ.*
47 सतताजिह् *satatā̤jih.*	सतता॒जिह्युम् *satatā̤jⁱhyumᵘ.*
48 अरताजिह् *aratā̤jih.*	अरता॒जिह्युम् *aratā̤jⁱhyumᵘ.*
49 कुनवञ्ज़ाह् *kunawanzāh.*	कुनवञ्ज़ा॒ह्युम् *kunawanzā̤hyumᵘ.*
50 पन्च़ाह् *pant̤sāh.*	पन्च़ा॒ह्युम् *pant̤sā̤hyumᵘ.*
51 अकवञ्ज़ाह् *akawanzāh.*	अकवञ्ज़ा॒ह्युम् *akawanzā̤hyumᵘ.*
52 द्ववञ्ज़ाह् *dŏwanzāh.*	द्ववञ्ज़ा॒ह्युम् *dŏwanzā̤hyumᵘ.*
53 त्र्वञ्ज़ाह् *trᵃwanzāh.*	त्र्वञ्ज़ा॒ह्युम् *trᵃwanzā̤hyumᵘ.*
54 च़वञ्ज़ाह् *t̤sŏwanzāh.*	च़वञ्ज़ा॒ह्युम् *t̤sŏwanzā̤hyumᵘ.*
55 पान्च़वञ्ज़ाह् *pā̤nt̤sawanzāh.*	पान्च़वञ्ज़ा॒ह्युम् *pā̤nt̤sawanzā̤hyumᵘ.*
56 षवञ्ज़ाह् *ṣawanzāh.*	षवञ्ज़ा॒ह्युम् *ṣawanzā̤hyumᵘ.*
57 सतवञ्ज़ाह् *satawanzāh.*	सतवञ्ज़ा॒ह्युम् *satawanzā̤hyumᵘ.*
58 अरवञ्ज़ाह् *arawanzāh.*	अरवञ्ज़ा॒ह्युम् *arawanzā̤hyumᵘ.*
59 कुनहैठ् *kunahaiṭh.*	कुनहैठ्युम् *kunahaiṭhyumᵘ.*
60 शैठ् *çaiṭh* or शेठ् *çēṭh.*	शीठ्युम् *çīthyumᵘ.*
61 अकहैठ् *akahaiṭh.*[2]	अकहैठ्युम् *akahaiṭhyumᵘ.*
62 द्वहैठ् *dŏhaiṭh.*	द्वहैठ्युम् *dŏhaiṭhyumᵘ.*
63 त्र्हैठ् *trᵃhaiṭh.*	त्र्हैठ्युम् *trᵃhaiṭhyumᵘ.*
64 च़हैठ् *t̤sŏhaiṭh.*	च़हैठ्युम् *t̤sŏhaiṭhyumᵘ.*
65 पान्च़हैठ् *pā̤nt̤sahaiṭh.*	पान्च़हैठ्युम् *pā̤nt̤sahaiṭhyumᵘ.*

1 Sometimes pronounced *akatā̤jyumᵘ*, and so throughout the forties; except forty-nine.

2 Also pronounced *akahā̤ṭh, akahā̤ṭhyumᵘ*, and so throughout the sixties, except sixty-nine.

66 ष्ठैठ् *ṣ°haiṭh.* ष्ठैठ्युम् *ṣ°haiṭhyum°.*

67 सतष्ठैठ् *satahaiṭh.* सतष्ठैठ्युम् *satahaiṭhyum°.*

68 अरष्ठैठ् *arahaiṭh.* अरष्ठैठ्युम् *arahaiṭhyum°.*

69 कुनसतथ् *kunasatăth.* कुनसतत्युम् *kunasatatyum°.*

70 सतथ् *satăth.* सतत्युम् *satatyum°.*

71 अकसतथ् *akasatăth.* अकसतत्युम् *akasatatyum°.*

72 दुसतथ् *dusatăth.*[1] दुसतत्युम् *dusatatyum°.*

73 त्रसतथ् *tr°satăth.* त्रसतत्युम् *tr°satatyum°.*

74 त्सुसतथ् *tsŭsatăth.* त्सुसतत्युम् *tsŭsatatyum°.*

75 पान्त्सतथ् *pāṇtsasatăth.* पान्त्सतत्युम् *pāṇtsasatatyum°.*

76 ष्सतथ् *ṣ°satăth.* ष्सतत्युम् *ṣ°satatyum°.*

77 सतसतथ् *satasatăth.* सतसतत्युम् *satasatatyum°.*

78 अरसतथ् *arasatăth.* अरसतत्युम् *arasatatyum°.*

79 कुनश्रीथ् *kunaçīth.* कुनश्रीत्युम् *kunaçītyum°.*

80 श्रीथ् *çīth.* श्रीत्युम् *çītyum°.*

81 अकश्रीथ् *akaçīth.* अकश्रीत्युम् *akaçītyum°.*

82 द्वयश्रीथ् *dŏyaçīth.* द्वयश्रीत्युम् *dŏyaçītyum°.*

83 त्रयश्रीथ् *trĕyaçīth.* त्रयश्रीत्युम् *trĕyaçītyum°.*

84 त्सुयश्रीथ् *tsŭyaçīth.* त्सुयश्रीत्युम् *tsŭyaçītyum°.*

85 पान्त्सश्रीथ् *pāṇtsaçīth.* पान्त्सश्रीत्युम् *pāṇtsaçītyum°.*

86 षयश्रीथ् *ṣayaçīth.* षयश्रीत्युम् *ṣayaçītyum°.*

87 सतश्रीथ् *sataçīth.* सतश्रीत्युम् *sataçītyum°.*

88 अरश्रीथ् *araçīth.* अरश्रीत्युम् *araçītyum°.*

89 कुननमथ् *kunanamăth.* कुननमत्युम् *kunanamatyum°.*

90 नमथ् *namăth.* नमत्युम् *namatyum°.*

91 अकनमथ् *akanamăth.* अकनमत्युम् *akanamatyum°.*

[1] Not द्वसतथ् *dŏsatăth*, as we might expect.

92	दुनमथ् *dunamăth.*[1]	दुनमत्युम् *dunamatyum*ª.
93	त्रनमथ् *trºnamăth.*	त्रनमत्युम् *trºnamatyum*ª.
94	त्सनमथ् *tsŏnamăth.*	त्सनमत्युम् *tsŏnamatyum*ª.
95	पांच्नमथ् *pāṇtsanamăth.*	पांच्नमत्युम् *pāṇtsanamatyum*ª.
96	ष्नमथ् *ṣºnamăth.*	ष्नमत्युम् *ṣºnamatyum*ª.
97	सतनमथ् *satanamăth.*	सतनमत्युम् *satanamatyum*ª.
98	अरनमथ् *aranamăth.*	अरनमत्युम् *aranamatyum*ª.
99	नमानमथ् *namānamăth.*	नमानमत्युम् *namānamatyum*ª.
100	हथ् *hăth.*	हत्युम् *hatyum*ª.
101	अख्हथ् त अख् *ăkh hăth tº ăkh,* and so on.	अख्हथ् त अक्युम् *ăkh hăth tº akyum*ª and so on.
110	अख्हथ् त दह् *ăkh hăth tº dah,* and so on.	अख् हथ् त दह्युम् *ăkh hăth tº dahyum*ª and so on.
200	ज़ह् हथ् *zºh hăth.*	दुहत्युम् *duhatyum*ª.
300	त्रिहथ् *trihăth.*	त्रहत्युम् *trºhatyum*ª.
400	त्सोर् हथ् *tsōr hăth.*	त्सुहत्युम् *tsuhatyum*ª.
500	पांच्ह् हथ् *pāṇtsh hăth.*	पांच्हत्युम् *pāṇtsahatyum*ª.
600	षहथ् *ṣahăth.*	षहत्युम् *ṣahatyum*ª.
700	सथ् हथ् *săth hăth*	सतहत्युम् *satahatyum*ª.
800	ऐठ् हथ् *aiṭh hăth.*	ऐठहत्युम् *aiṭhahatyum*ª.
900	नव् श्रथ् *nav çăth.*	नवश्रत्युम् *navaçatyum*ª.
1000	सास् *sās.*	सास्युम् *sāsyum*ª.
10000	अय्यथ् *ayŏth.*	अय्यत्युम् *ayŏtyum*ª.
100000	लछ् *lăch.*	लछ्युम् *lạchyum*ª.
1,000,000	प्रय्यथ् *prayŏth.*	प्रय्यत्युम् *prayŏtyum*ª.
10,000,000	करोर् *kŏrōr.*	करोर्युम् *kŏrōryum*ª.

अख् *ăkh* is one: अखाह् *akhāh*, or अखाह् खण्ड़ा *akhāh khaṇḍā* means 'some one,' or 'about one,' (ii, iii. 38, 45).

[1] Not दनमथ् *dōnamăth*, as we might expect.

अख् *ăkh* is thus declined.

Nom.	अख् *ăkh.*
Acc.	अकिस् *akis.*
Gen.	अक्युकॖ *akyuk*^{u}, or अ॑कि स॑न्दॖ *ạk*^{i} *sạnd*^{u}.
Ag.	अ॑कि *ạk*^{i}.

अखाह् *akhāh* is only used in the nominative (ii. iii. 38).

अकुय् *aku-y*, fem. अ॑कूय् *ạk*^{ū}*-y*, is 'only one.' So also कुनॖ *kun*^{u}, fem. कुञ् *kuñ*, means 'only one' (iv. 191).

ज़्ह् *z*^{a}*h*, two, becomes द्व् *dw* in all cases except the nom. pl., and is thus declined (ii. iii. 32, 33).

	Sg. (a pair).	Pl. (two).
Nom.	(जोर *jōr*^{a}).	ज़्ह् *z*^{a}*h.*
Acc.	(जोरस् *jōras*).	द्वन् *dwan.*
Ag.	(जोरन् *jōran*).	द्वयौ *dwayau.*
Instr.	द्वयि सू॑तिन् *dwayi sụ̄tin* (जोर सू॑तिन् *jōr*^{a} *sụ̄tin*).	द्वयौ सू॑तिन् *dwayau sụ̄tin.*

जोराह् *jōrāh*, 'any pair,' 'some pair,' or 'about two,' is declined in the plural. Thus जोराहौ सू॑तिन् *jōrāhau sụ̄tin* (ii. iii. 38). जोराह् खण्डा *jōrāh khaṇḍa*, means 'about two, but a little less' (ii. iii. 45). ज़्य् *z*^{a}*-y*, means 'only two.'

There are two words signifying 'a pair,' (iv. 192). These are ह॑रु *hạr*^{u} (pl. ह॑रि *hạr*^{i}) and जोर *jōr*^{a} or जूरि *jūr*^{i}.

ह॑रु *hạr*^{u} is generally used of things without life; thus,—

ग्रज्यह॑रु *ḍĕjĕhạr*^{u}, a pair of ear pendants.

दूरह॑रु *dūr*^{a}*hạr*^{u}, a pair of ear rings.

वा॑लिह॑रु *wạ̄l*^{i}*hạr*^{u}, a pair of rings (वोलॖ *wōl*^{u}).

पुलह॑रु *pul*^{a}*hạr*^{u}, a pair of grass sandals.

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ख़ावह॑रु *khrāv^{a}hạr^{u}*, a pair of wooden sandals.

अख़्ह॑रु *ăkhhạr^{u}*, one pair; ज़्ह्ह॑रि *z^{a}hhạr^{i}*, two pairs; त्रह्ह॑रि *trĕhhạr^{i}*, three pairs.

In the villages we find the word हूरि *hūr^{i}*. Thus दाँदहूरि *dā̃dahūr^{i}* a pair of bullocks. Here the word is used of a thing with life.

जोर *jōr^{a}* or जूरि *jūr^{i}* is used generally of things with life, but not always. Thus,—

म्वक्तजूरि *mŏktajūr^{i}*, a pair of pearls.

दाँदजूरि *dā̃dajūr^{i}*, a pair of bullocks.

कोतर्जूरि *kōtarjūr^{i}*, a pair of pigeons (कोतुर् *kōtur*, a pigeon).

गुरिजूरि *gur^{i}jūr^{i}*, a pair of horses (गुरु *gur^{a}*, a horse).

अख़्जोर *akhjōr^{a}*, one pair; ज़्ह्जोर *z^{a}hjōr^{a}*, two pairs; त्रह्जोर *trĕhjōr^{a}*, three pairs.

Note that जोर *jōr^{a}* and जूरि *jūr^{i}* are not interchangeable.

त्रिह् *trih*, three, is thus declined (ii. iii. 34).

Nom.	त्रिह् *trih*.
Acc.	त्र्यन् *tryan* (*trĕn*).
Ag.	त्रयौ *trĕyau*

The word तार *tār^{a}* is indefinite, and means 'about three.' त्रिय् *tri-y*, is 'only three' (ii. iii. 39).

'A group of three,' 'a trio,' is त्रिल *tril^{a}*, (masc.), or (iv. 192) त्रिच *tric^{a}* (fem.).

So also षह् *ṣah*, six (ii. iii. 34).

Nom.	षह् *ṣah*.
Acc.	षन् *ṣan*.
Ag.	षयौ *ṣayau*.

'About six' is षखाह् *ṣakhāh*. 'Only six' is षय् *ṣa-y* (ii. iii. 42).

'A group of six' (iv. 192) षक *ṣak^{a}*. It is also षखाह् *ṣakhāh*, and

षखाह् खण्डा *ṣakhāh khaṇḍā* means 'a group of about six' (ii. iii. 42). The latter usually means a group of a little less than six.

च़ोर् *tsōr*, four, is thus declined (ii. iii. 35).

Nom. च़ोर् *tsōr.*

Acc. च़ोरन् *tsōran* or च़न् *tsŏn.*

Ag. च़ोरौ *tsōrau.*

च़मर *tsŏmar*ᵃ, (ii. iii. 40), means 'about four,' and च़ोरय् *tsōra-y* is 'only four' (ii. iii. 40).

च़ाख् *tsākh* means 'a group of four,' 'a four' (iv. 192). च़ाखाह् *tsākhāh* means 'a group of about four, and च़ाखाह् खण्डा *tsākhāh khaṇḍā* means 'a group of a little less than four' (ii. iii. 45).

This numeral in composition becomes च़ *tsŏ.* Thus (*vide post*) च़शवय् *tsŏçaway*, even the four; च़दाह् *tsŏdāh*, fourteen: च़वुह् *tsŏwuh*, twenty-four, and so on.

The word for 'five' is पा॑न्च़् *pā̤nts* or पान्च़् *pānts*

Nom. पा॑न्च़् *pā̤nts.*

Acc. पा॑न्च़न् *pā̤ntsan.*

Ag. पा॑न्च़ौ *pā̤tsau.*

'About five' is पैँश *paĩç*ᵃ, and 'only five' is पा॑न्च़य् *pā̤ntsa-y* (ii. iii. 41). प॑ञ्ज़ु *pạnz*ᵘ means 'a group of five' (iv. 192). प॑न्ज़्वाह् खण्डा *pạnzwāh khaṇḍā* means 'about five but a little less.'

For 'six,' see under 'three.'

The word for 'seven' is सथ् *săth.* It is thus declined—

Acc. सतन् *satan.*

Ag. सतौ *satau.*

'About seven' is सटेठ *saṭēṭh*ᵃ. 'Only seven' is सतय् *sata-y* (ii. iii. 43).

स॑तृ *sạt*ᵘ is a group of seven (iv. 192). स॑त्वाह् खण्डा *sạtvāh khaṇḍā* is 'about seven, but a little less.'

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The declension and formation of the remaining numerals is regular. 'About' is signified by adding अमर *amar*ᵃ, and 'only' by adding. अय् *ay* (ii. iii. 44).

Thus ऐठ् *aiṭh*, (acc. pl. ऐठन् *aiṭhan*); 'about eight,' ऐठमर *aiṭhamar*ᵃ; 'only eight,' ऐठय् *aiṭha-y*. ऐ॒ठि *aiṭh*ⁱ, is a group of eight (iv. 192).

ऊ॒ठि *ūṭh*ⁱ (pl.) is groups of eight (*e.g.* four eights=thirty-two, च़ोर् ऊ॒ठि द्वयत्र्ह् *tsōr ūṭh*ⁱ *dŏyatr*ᵃ*h*).

नव् *nav*, nine; नवमर *navamar*ᵃ, about nine; नवय् *nava-y*, only nine.

न॑मु॒ *nạm*ᵘ is a group of nine (iv. 192). न॑म्वाह् खण्डा *nạmwāh khaṇḍā* is a group of about nine, but a little less.

दह् *dah*, ten; दहमर *dahamar*ᵃ, about ten; दहय् *daha-y*, only ten.

द॑हु॒ *dạh*ᵘ is a group of ten (iv. 192), and द॑ह्वाह् खण्डा *dạhwāh khaṇḍā* is a group of about ten, but a little less.

हथ् *hăth* is a hundred; हथाह् खण्डा *hăthāh khaṇḍā* is a group of about a hundred, but a little less.

The word for 'fifty' is पन्च़ाह् *pantsāh*, the प *pa* of which becomes व *wa* in composition (iii. 10). Thus, अक-वञ्ज़ाह् *aka-wanzāh*, fifty-one; द्व-वञ्ज़ाह् *dŏ-wanzāh*, fifty-two; कुन-वञ्ज़ाह् *kun*ᵃ*-wanzāh*, forty-nine.

The word for 'sixty' is शेठ् *çēth* (iv, 176) or शैठ् *çaiṭh*, the श् *ç* of both of which becomes ह् *h* in composition (iii. 11). Thus कुन-हैठ् *kun*ᵃ*-haiṭh*, fifty-nine; द्व-हैठ् *dŏ-haiṭh*, sixty-two.

हथ् *hăth*; this is the form which a hundred takes in composition up to and including eight hundred (iv. 115); thus

अख्हथ् *ăkhhăth*, one hundred, ज़्ह्हथ् *z*ᵃ*hhăth* two hundred, त्रिहथ् *trihăth* (dropping ह् *h*), three hundred.

शथ् *çăth*; this is the form which a hundred takes in composition after eight hundred (iv. 116); thus

नव्शथ् *navçăth*, nine hundred; काह्शथ् *kāhçăth*, eleven hundred; बाह्शथ् *bāhçăth*, twelve hundred.

The following terms are peculiar to counting (iv. 174–177).

(*a*) ट्ॅक *tlāk*^{u} means two pice.

(*b*) ह्थ् *hăth* means a pice, when more than two are referred to in counting. Thus, त्रिह्थ् *trihăth*, three pice; च़ोर्ह्थ् *ts̲ōrhăth*, four pice; पाँच्ह्थ् *pā̆ts̲-hăth*, five pice. As in the case of numerals, ह्थ् *hăth*, becomes श्थ् *çăth* from nine on. Thus;—नव्श्थ् *navçăth*. Ten pice are also called सास् *sās*, lit. a thousand.

(*c*) ज़ान् *zạn*^{u}, this is the word used in counting persons. Thus ज़ानि पंचाह्मर *zạn*^{i} *pant̲sāhmara*, about fifty men. ग्येठ् ज़ानि *çĕth zạn*^{i}, sixty men.

(*d*) लूख् *lūkh*. This word must be used in counting persons by hundreds or thousands. Thus ह्थ् लूक *hăth lūk*^{a}, a hundred people; ज़ह्ह्थ् लूक *z*^{a}*hhăth lūk*^{a}, two hundred persons; त्रिह्थ् लूक *trihăth lūk*^{a} three hundred people. We also sometimes, however, but rarely, have ह्थ् ज़नि *hăth zani*, a hundred people, सास् ज़नि *sās zani*, a thousand people, in both of which the *i* is fully pronounced.

When the emphatic य् *y* is added to numerals, we get the following forms—

ह्दश्वय् *dŏçawa-y*, or ह्दनवय् *dŏnawa-y* even both.

त्रश्वय् *trĕçawa-y* or त्रनवय् *tryanawa-y*, even all three.

च़्श्वय् *ts̲ŏçawa-y* or च़्नवय् *ts̲ŏnawa-y*, even all four.

पाँच्वय् *pā̆ts̲awa-y*, even all five.

षश्वय् *ṣaçawa-y* or षनवय् *ṣanawa-y*, even all six.

सतवय् *satawa-y*, even the seven.

ऐठवय् *aithawa-y*, even the eight.

नववय् *navawa-y* even the nine.

And so on.

The acc. is नववनी *navawanī*. The agent is नववेय् *nawaway*^{i}, and so for all, (iv. 186–188).

We may also say द्वि ह्दश्वय् *dwaç*^{i} *doçawa-y*; नेवि नववय् *naw*^{i} *nawawa-y*, and so in all, repeating the first element, (iv. 189).

In multiplication, the numerals take special forms, as follows :—

1.	ꤵक्यि क्या नाम् *ạkⁱ kyā nām.*	16.	षुरा॑ह्यि *ṣurā̤hⁱ.*
2.	द्वगॅनि *dŏgạnⁱ.*	17.	सदा॑ह्यि *sadā̤hⁱ.*
3.	त्रान *trānᵒ.*	18.	अरदा॑ह्यि *aradā̤hⁱ.*
4.	च्राख् *ʦākh.*	19.	कुनवुह्यि *kunawuhⁱ.*
5.	पॅञ्ज़ि *pạnzⁱ.*	20.	वुह्यि *wuhⁱ.*
6.	षक *ṣakᵒ.*	21.	अकवुह्यि *akawuhⁱ.*
7.	सॅति *sạtⁱ.*	30.	त्रुह्यि *trᵒhⁱ.*
8.	ऊठि *ūṭhⁱ.*	31.	अकत्रुह्यि *akatrᵒhⁱ.*
9.	नॅमि *nạmⁱ.*	40.	च्नजिह्यि *ʦatajihⁱ.*
10.	दॅह्यि *dạhⁱ.*	50.	पन्च्या॑ह्यि *panʦā̤hⁱ.*
11.	का॑ह्यि *kā̤hⁱ.*	60.	ग्रीठि *çīṭhⁱ.*
12.	बा॑ह्यि *bā̤hⁱ.*	70.	सतॅति *satᵒtⁱ.*
13.	त्रुवा॑ह्यि *truwā̤hⁱ.*	80.	ग्रीॅति *çīṭhⁱ.*
14.	च्दा॑ह्यि *ʦŏdā̤hⁱ.*	90.	नमॅति *namạtⁱ.*
15.	पन्दा॑ह्यि *pandā̤hⁱ.*	100.	ह्यॅति *hạtⁱ.*

They are used as follows :—

ꤵख् ꤵक्यि क्या नाम् ꤵख् *ākh ạkⁱ kyā nām ākh*, one one (is) one.

ज़ह ꤵक्यि क्या नाम् ज़ह् *zᵃh ạkⁱ kyā nām zᵃh*, two ones (are) two.

त्रिह् द्वगॅनि षह् *trih dōgạnⁱ ṣah*, three twos (are) six.

सथ् षक द्वयताजिह् *sāth ṣakᵒ dŏyatājih*, seven sixes (are) forty-two.

These special forms may be called multiplicative numerals. Multiplicatives above ten can only be used with numerals above ten. Thus काह् बा॑ह्यि ꤵख् च्थ् न द्वयत्रुह् *kāh bā̤hⁱ ākh hāth tᵒ dŏyatrᵒh*, eleven twelves (are) a hundred and thirty-two. We cannot say च्योर् बा॑ह्यि अरताजिह् *ʦōr bā̤hⁱ aratājih*, four twelves are forty-eight, because four is not greater than ten. We can only say बाह् च्याख् अरताजिह् *bāh ʦākh aratājih*, twelve fours (are) forty-eight.

G. Pronouns.

These change their bases in Declension. The following paradigms will give sufficient information.

ब्वह् *bŏh*, I.

Nom.	ब्वह् *bŏh* (ii. iii. 8).	अ॑सि *ạs*^{i} (15).
Acc.	म्य *mĕ* (8).	अस्य *asĕ* (15).
Ag.	म्य *mĕ* (8, 9).	अस्य *asĕ* (15).
Gen.	म्योनु *myōn*^{u} (11).	सोनु *sōn*^{u} (19)

Genitive Forms.

	SINGULAR.	PLURAL.
Masc.	म्योनु *myōn*^{u}.	म्या॑नि *myạ̄n*^{i}.
Fem.	म्या॑ञ् *myạ̄ñ*.	म्याञ *myāñĕ*.

Similarly for the Plural.

च़्ह् *ts*^{a}*h*, thou.

Nom.	च़्ह् *ts*^{a}*h* (ii. iii. 8).	त्व॑हि *twạh*^{i} (15).
Acc.	च्य़ *tsĕ* (8).	त्वह्य *tŏhĕ* (15).
Ag.	च्य़ *tse* (8, 9).	त्वह्य *tŏhĕ* (15).
Gen.	च्योनु *cyōn*^{u} (11).	तुह॑न्दु *tuhạnd*^{u} (18).

Genitive Forms.

	SINGULAR.	PLURAL.
Masc.	च्योनु *cyōn*^{u}.	च्या॑नि *cyạ̄n*^{i}.
Fem.	च्या॑ञ् *cyạ̄ñ*.	च्याञ *cyāñĕ*.

Similarly for the Plural.

तिह् *tih*, that (out of sight), he, she, it.

Nom.	Masc. सुह् *suh* (ii. iii. 2); fem. स्वह् *sŏh*, or स *sa* (3); neut. तिह् *tih* (1).	तिम् *tim* (16).	
Acc.	(Masc. fem.) तमिस् *tamis* (5); तस् *tas* (20); neut. तथ् *tăth* (7).	तिमन् *timan* (16).	
Ag.	(M. n.) तॅमि *tạm*[i] (5); f. तमि *tami*.	तिमौ *timau* (16).	
Gen.	(M. f.) तॅमि सॅन्दु *tạm*[i] *sạnd*[u]; तसॅन्दु *tasạnd*[u]; तस् *tas* (20); (n.) तम्युक् *tamyuk*[u].	तिहॅन्दु *tihạnd*[u]; तिमन् हॅन्दु *timan hạnd*[u] (16, 20).	

This pronoun only refers to things not within sight. For things within sight उह् *huh* is used.

The neuter form agrees with all things without life, whether their grammatical gender is masculine or feminine. Thus तथ् पोथ्य परनस् कित् प्रङ् *tăth pōthĕ paranas kyut*[u] *prayg*, a couch for reading that book. So in the case of the other pronouns. The plural is the same for all three genders. So elsewhere.

यिह् *yih*, who.

Nom.	Masc. युस् *yus* (ii. iii. 2); fem. य्वस्सु *yŏss*[a] (4); neut. यिह् *yih* (1).	यिम् *yim* (16).	
Acc.	(Masc. fem.) यमिस् *yĕmis* (5); यस् *yas* (20), neut. यथ् *yăth* (7).	यिमन् *yiman* (16).	
Ag.	(M. n.) यॅमि *yạm*[i] (5); (f.) यमि *yami* (5).	यिमौ *yimau* (16).	

Gen. (M. f.) यॅमि सॅन्दु *yąmⁱ* यिहॅन्दु *yihąndᵘ*; यिमन् हॅन्दु *sąndᵘ*; यसॅन्दु *yasąndᵘ* *yiman hąndᵘ* (16, 20).
(20); यस् *yas* (20); (n.)
यम्युक् *yĕmyukᵘ*.

क्याह् *kyāh*, who, what?

Nom. Masc. कुस् *kus* (ii. iii. 2); कम् *kam* (16).
fem. कस्स *kŏssᵃ* (4);
neut. क्याह् *kyāh* (1).

Acc. (Masc. fem.) कमिस् (5); कमन् *kaman* (16).
कस् *kas* (20); (neut.)
कथ् *kăth* (7).

Ag. (M. n.) कॅमि *kąmⁱ* (5); कमो *kamau* (16).
(f.) कमि *kami* (5).

Gen. (M. f.) कॅमि सॅन्दु *kąmⁱ* कहॅन्दु *kahąndᵘ*; कमन् हॅन्दु *sąndᵘ*; कसॅन्दु *kasąndu*; *kaman hąndᵘ* (16, 20).
कस् *kas* (20); n. कम्युक्
kamyukᵘ.

य्ह् *yih*, this.

Nom. Masc. य्ह् *yih* (ii. iii. 2); यम *yim* (16).
fem. य्ह् *yih* (3); neut.
य्ह् *yih* (1).

Acc. (Masc. fem.) यमिस् *yimis* यमन् *yiman* (16).
(5); न्यमिस् *nŏmis* (5);
neut. यथ् *yith* (7); न्यथ्
nŏth (7).

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Ag.	(M. n.) इ॒मि *yim*^{i} (5); न्व॒॑मि *nwạm*^{i} (5); (f.) इमि *yimi* (5); न्वमि *nomi* (5).	इमौ *yimau* (16).
Gen.	(M. f.) इ॒मि स॑न्दु॒ *yim*^{i} *sạnd*^{u}; इस॑न्दु॒ *yisạnd*^{u} (20); न्व॒॑मि स॑न्दु॒ *nwạm*^{i} *sạnd*^{u}; (n.) इम्युकु॒ *yimyuk*^{u}; न्वम्युकु॒ *nŏmyuk*^{u}.	इह॑न्दु॒ *yihạnd*^{u}; इमन् ह॑न्दु॒ *yiman hạnd*^{u} (16, 20).

हुह् *huh*, that (within sight).

Nom.	Masc. हुह् *huh* (ii. iii. 2); fem. ह्वह् *hŏh* (3); neut. हुह् *huh* (1).	हुम् *hum* (16).
Acc.	(Masc. fem.) हुमिस् *humis* (5); अमिस् *amis* (6); neut. हुथ् *huth* (7).	हुमन् *human* (16).
Ag.	(M. n.) हु॒मि *hum*^{i} (5); अ॒॑मि *ạm*^{i} (6); (f.) हुमि *humi* (5); अमि *ami* (5).	हुमौ *humau* (16).
Gen.	(M. f.) हु॒मि स॑न्दु॒ *hum*^{i} *sạnd*^{u}; अ॒॑मि स॑न्दु॒ *ạm*^{i} *sạnd*^{u}; हुस॑न्दु॒ *husạnd*^{u}; अस॑न्दु॒ *asạnd*^{u} (20); (n.) हुम्युकु॒ *humyuk*^{u}; अम्युकु॒ *amyuk*^{u}.	हुह॑न्दु॒ *huhạnd*^{u}; हुमन् ह॑न्दु॒ *human hạnd*^{u} (16, 20).

This pronoun only refers to things within sight. For things out of sight, तिह् *tih* is used.

The Reflexive Pronoun.

The word पान *pān*ª, self, is declined only in the singular (ii. iii. 36). Its genitive is irregular (37). Thus,—

Nom.	पान *pān*ª	self or selves.
Acc.	पानस् *pānas*	self or selves.
Gen.	पनुन् *panun*ª (fem. पनॅञ् *panañ*)	
Ag.	पान *pān*ª	by self or selves (NOT पानन् *pānan*).

[Example मय पान कॅरुम् *mĕ pān*ª *kṛu-m* by me, myself, it was done].

The word पान् *pān*, meaning the human body is declined regularly in both numbers, like a noun of the first declension. Its genitive is hence पानुक् *pānuk*ª (ii. iii. 36, 37).

Pronominal adjectives (ii. iii. 25–27).

यूत् *yūt*ª	this much.	Fem. यूच *yūʦ*ª.
त्यूत् *tyūt*ª	that much.	त्यूच *tyūʦ*ª.
य्यूत् *yyūt*ª	how much.	य्यूच *yyūʦ*ª.
कूत् *kūt*ª	how much.	कूच *kūʦ*ª.

The declension of these is given under the head of nouns, see p. 55.

Indefinite Pronouns.

कॉह् *kāh* or कूह् *kūh* or कॉहाह् *kāʦhāh* any one, some one, (m. and f.) (ii. iii. 29, 30, 31).

	Singular.	Plural.
Nom.	कूह् *kūh* कॉह् *kāh* or कॉहाह् *kāʦhāh*.	केन्च् *kēnʦ*.
Acc.	कॅसि *kasi*.	केन्चन् *kēnʦan*.
Ag.	कॅसि *kasi*.	केन्चौ *kenʦau*.

In the singular it is always declined like a feminine noun, even in the masculine.

कॅहाह् *kĕʦhāh*, means 'any thing' (ii. iii. 31).

It is not declined.

H. Emphatic and Indefinite Particles.

(ii. iii. 21 ; iv. 126).

The particle य् *y* is added to all words to give emphasis. It may be added either to the main word or to the declensional or conjugational suffix. When added to a word ending in a consonant it becomes ञ्य् ^{a}y. Thus,—

तसंन्दुय् *tasanduy*, even his, from तसंन्दू *tasand*^{a}, his.

तमि संन्दुय् *tam*^{i} *sanduy*, even his, तमि संन्दू *tam*^{i} *sand*^{a}, his.

ग्वरसूय् चन्दर् *gŏras*^{a}y *andar*, even in the preceptor. ग्वरस् चन्दर् *gŏras andar*, in the preceptor.

ग्वरनूय् चन्दर् *gŏran*^{a}y *andar*, even in the preceptors. ग्वरन् चन्दर् *gŏran andar* in the preceptors.

ग्वरनूय् छन्दि पुछ् *gŏran*^{a}y *handi putshy*, even to the preceptors. ग्वरन् छन्दि पुछ् *gŏran handi putshy* to the preceptors.

or

ग्वरन् छन्दिय् पुछ् *gŏran handiy putshy*

or

ग्वरन् छन्दि पुछिय् *gŏran handi putshiy*.*

गाटुलुय् *gāṭuluy*, certainly clever, from गाटुल् *gāṭul*^{a}, clever.

करानूय् छुह् *karān*^{a}y *chuh*, he is certainly doing. करान् छुह् *karān chuh*, he is doing.

कर्यानूय् *karyōn*^{a}y, he certainly did. कर्यान् *karyōn*, he did.

करिय् *kariy*, he will certainly do. करि *kari*, he will do.

तिथय् *tithay*, even in that manner. तिथ *tith*^{a} in that manner.

The word सोर् *sōr*^{a}, all, always takes this suffix (ii. iii. 22).

Thus,—

Nom. sg. सोरय् *sōruy* ; Nom. pl. सारिय् *sāriy* ; instead of सोर् *sōr*^{a} सारि *sār*^{i}, respectively.

* पुछ् *putshy* is really another way of writing पुछि *putshi*.

When य् *y* is suffixed to the letter औ *au*, the two together become अवूय् *av^{a}y*, (ii. iii. 23).

Thus,—

गुर्यवूय् सू॑तिन् *guryav^{a}y sūtin*, by the horses certainly, from गुर्यौ सू॑तिन् *guryau sūtin*, by the horses.

नमवूय् सू॑तिन् *namav^{a}y sūtin*, even by the nails, from नमौ सू॑तिन् *namau sūtin*.

Indefiniteness is shown by adding आह् *āh* to a noun in the nom. sing. The termination cannot be added to other cases (ii. iii. 38).

कथाह् *kathāh*, any story, from कथ् *kăth*, a story; अखाह् *akhāh*, some one, any one, from अख् *ăkh*, one; जोराह् *jōrāh*, some pair or other, from जोर *jōr^{a}*, a pair. The last may, however, be declined, thus जोराहौ सू॑तिन् *jōrāhau sūtin* by any pair.

When खण्डा *khaṇḍā* is added to these words, it indicates a slight diminution. Thus क्रुह् *kruh*, a *kōs*; क्रुहाह् *kruhāh*, about a *kōs*; क्रुहाह् खण्डा *kruhāh khaṇḍā*, about a *kōs*, but a little less; so द्वहाह् खण्डा *dŏhāh khaṇḍā*, about a day, but something less; ऋ॑थाह् खण्डा *ṛathāh khaṇḍā*, about a season but something less; रुपयाह् खण्डा *rupayāh khaṇḍā*, about a rupee, but something less. The syllable आह् *āh* may be omitted, and then खण्ड् *khaṇḍ* not खण्डा *khaṇḍā* is used. Thus, क्रुह् खण्ड् *kruh khaṇḍ*, about a *kōs*, but a little less.

The suffix ज़ू *z^{a}* added to a word signifies a group, or number. Thus, from कठ् *kăṭh*, rams, कठ॑ज़ू *kăṭaz^{a}*, a number of rams; from गुरि *gur^{i}*, horses, गुरिज़ू *guriz^{a}*, a number of horses, a troop of horses; from रुपय *rupayĕ*, rupees, रुपय॑ज़ू *rupayĕz^{a}*, a number of rupees; कञ *kañĕ* stones, कञ॑ज़ू *kañĕz^{a}*, a heap of stones (ii. iii. 46).

The word पहान् *pahān* qualifies the word which it follows (iv. 193). Thus,—

ब॑ड़ु पहान् *baḍ^{u} pahān*, somewhat big.

व्य॑ठु पहान् *vyaṭh^{u} pahān*, somewhat stout.

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वुषुण् पहान् *wuṣuṇ pahān*, somewhat hot.

दूर् पहान् *dūr pahān*, somewhat distant.

न्यूर् पहान् *nyūr pahān*, somewhat near.

ब्रोंठ् पहान् *brōṭh pahān*, somewhat in front.

पथ् पहान् *păth pahān*, somewhat behind.

च़ीरि पहान् *ts̱īr*^{i} *pahān*, after some time (च़ेर् *ts̱ēr*, delay).

कांशुरु पहान् *kāçur*^{u} *pahān*, somewhat Kashmīrī.

बंगालुकु पहान् *baŋgāluk*^{u} *pahān*, somewhat Bengali.

वुहुर्युंदु पहान् *wuhuryund*^{u} *pahān*, somewhat in that direction.

यहुर्युंदु पहान् *yahuryund*^{u} *pahān*, somewhat in this direction.

The following conjunctions are given by Īçvara-kaula.

त *t*^{a}, and (iv. 178). *E.g.*, सुह् त च़्ह् *suh t*^{a} *ts̱*^{a}*h*, he and thou.

ति *ti*, also (iv. 179). It is also used instead of त *t*^{a} with plurals.

Thus,—सुह् ति च़्ह् ति *suh ti ts̱*^{a}*h ti*, he also, you also. महनिवि ति गुपन् ति आय् *mahaniv*^{i} *ti gupan ti āy*, both the men and the cattle came. We cannot say महनिवि त गुपन् त आय् *mahaniv*^{i} *t*^{a} *gupan t*^{a} *āy*.

बिय *biy*^{a}, means, 'again.' It also means 'other,' (iv. 180). Thus, बिय कॅरिज़ि *biy*^{a} *kạr*^{i}*zi*, you should do it again. बिय बति *biya wati* by another road.

ज़न् *zan*, like (iv. 181). *E.g.*, तोत ज़न् छुह् परान् *tōt*^{a} *zan chuh parān*, he reads like a parrot. मॉलिस् ज़न् छुह् रछान् *mạ̄lis zan chuh rachān*, he protects him as if he (the object) was his father.

ह्युहु *hyuh*^{u} (also written हिहु *hih*^{u}), fem. हिशू *hiç*^{ū}, means 'like,' (iv. 182, 183). *E.g.*, मॉलिस् ह्युहु *mạ̄lis hyuh*^{a}, like his father, (*e.g.*, this child is like his father). मोलु ह्युहु छुस् *mōl*^{u} *hyuh*^{u} *chu-s* (*s* is the dative pronominal suffix of the 3rd person), he is like a father to him. स्वन् ह्युहु छुह् नॉपान् *sŏn hyuh*^{u} *chuh nạ̄pān*, it is shining like gold. We also have phrases like बुडु ह्युहु अॅनिज़्यन् *buḍ*^{u} *hyuh*^{u} *ạn*^{i}*zyan*, bring whoever (amongst them) is old, ——— not, bring him like an old man.

I. On the Rhyming Repetition of words (*anuprāsa*).

Words of any kind are repeated to show indefiniteness or reciprocity. In such a case the letter व *w* or *v* प *p* is usually substituted in the second word, for the first letter of the original word (viii. i. 30). Thus,

करान् वरान् छुह् *karān warān chuh*, he is doing it or nearly doing it.

द्यार् व्यार् अनिन् *dyār vyār anin*, let him bring the wealth, &c.

बत वत ख्यिन् *bat° wat° khyayin*, let him eat rice, &c.

अन्वार् वन्वार *anwār wanwār* or अन्वार् पन्वार् *anwār panwār*, turn and turn about.

If the main word begins with प *p* or व *v* or *w*, the second begins with व *v* or *w* or प *p* respectively (viii. i. 31). Thus,—

पर् वर् *par war*, read (imperative), &c.

पैंस वैंस दितिन् *paĩs° waĩs° ditin*, let him give pice and the like.

बाँगन् पाँगन् अन् *wãgan pãgan an*, bring brinjals and other like vegetables.

वाज़ पाज़ छिह् *wāz° pāz° chih*, they are cooks, &c.

The word व्युछु (विचु) *vyuts°*, a collection, makes व्युछु पोछु *vyuts° pōts°*, an omnium gatherum.

There are irregular formations, such as (viii. i. 32).

न्युक (निक) स्नुक *nyuk° snk°*, a collection. न्युक *nyuk°* means literally 'a little.'

म्यंड त्यंड *myaṇḍ° tyaṇḍ°*, mouthfuls, &c.

ह्वल कल *hal° kal°*, crooked, &c.; but

ह्वल वल *hal° wal°*, girdles and the like.

ह्वांज़ गांज़ *hãnz° gãnz°*, boatmen, &c.

फल फ्यत *phal° phyat°*, ornaments, &c.

ओंत वोंत *ōnt° wōnt°*, shallow and the like.

These compounds are feminine when they denote reciprocity. For examples, see p. 71.

J. Forms of address.

Instead of a formal vocative case, Kāçmirī uses a number of Interjections, each causing or not causing changes in the base of the noun with which they are used. The following is an abstract table showing the Interjections described by Içvara-kaula, in the *Sambuddhi-pāda* (ii. 2) of his grammar. As a rule, before interjectional suffixes, उ् *u-mātrā* and ऊ् *ū-mātrā* are changed to इ् *i* (or य् *y*).

Ref. to No. of Sūtra.	Interjection.	How used.	Word.	Form of address.
2	हे *hē*.	Respectful. By man to man.	नारान् *nārān* (N. P.)	हे नारान् *hē nārān*.
				हे नारान् जुव् *hē nārān juv*.
	हे *hē*—जुव् *juv* (or a caste-word instead of *juv*).		गण कौल् *gaṇ°-kaul* (N P.)	हे गण कौल् *hē gaṇ°-kaul*.
3	सा *sā* may be added after any of the above.	Ditto.		हे नारान् सा *hē nārān sā*.
				हे नारान् जुव् सा *hē nārān juv sā*.
				हे राम कौल् सा *hē rām°-kaul sā*.
4	हतसाहे *hatasāhē* may be substituted for हे *hē*.	Ditto.		हतसाहे नारान् जुव् *hatasāhē nārān juv*.
				हतसाहे राम कौल् *hatasāhē rām°-kaul*.
				हतसाहे नारान् जुव् सा *hatasāhē nārān juv sā*.

	Or हसांहे *hasạ̄hē*. With these, if neither जुव् *juv* nor any caste-word is used, then सां *sạ̄* must be added.			हतसांहे राम कौल् सां *hatasạ̄hē rām*ᵃ-*kaul sạ̄*. हसांहे नारान् जुव् *hasạ̄hē nārān juv*. हतसांहे गण सां. *hatasạ̄hē gaṇ*ᵃ *sạ̄*.
5	हे *hē*—बा *bā* used without जुव् *juv* or caste-word.	In addressing a priest, a person of the middle class, or a servant.	नारान् *nārān*.	हे नारान् बा *hē nārān bā*.
6	हतसांहे *hatasạ̄hē* or हतबाहे *hatabāhē*.	If the above are old.	सहज़ *sahaz*ᵃ (N. P.) ज़न *zan*ᵃ (N. P.)	हतसांहे सहज़् बा *hastaạ̄hē sahaz bā*. हतबाहे ज़न बा *hatabāhē zan*ᵃ *bā*.
7	—आ *ā* added either to the bare name or to the caste-word.	In addressing male juniors or inferiors.		नाराना *nārānā*. नारान् जुवा *nārān juvā*.
8	Or preceded by हता *hatā*.	Ditto.	मान *mān*ᵃ (N. P.) मान कौल *mān*ᵃ-*kaul*. गुल्ॖ *gul*ᵘ (N. P.)	हता माना *hatā mānā*. हता मान कौला *hatā mān*ᵃ-*kaulā*. हता गुल्या *hatā gulyā* (note the change of ᵃ to *y*).
9	हा *hā*—ओ *ō*.	In addressing a person at a distance, or in sorrow.	काक् *kāk*, a father.	हा नारानो *hā nārānō*. हा काको *hā kākō*.

Ref. to No. of Sûtra.	Interjection.	How used.	Word.	Form of address.
10	हतो *hatō* may be substituted for हा *hā*.	In addressing a person at a distance, or in sorrow.	प॑रु *par*^{u} (N. P.)	हतो पर्यो *hatō paryō* (note vowel change).
11	—मा॑ज़ू *mā̤j*^{ū} added to the bare name.	When a man addresses an elder woman.	पार्वत् *pārvat* (N. P.)	पार्वत् मा॑ज़ू *pārvat mā̤j*^{ū}.
12	बिञ् *biñ*.	When she is moderate in age, or of an age equal to that of the speaker.		पार्वत् बिञ् *pārvat biñ*.
13	हतमा॑ज़ू *hatamā̤j*^{ū} or हतबिञ् *hatabiñ* may precede.	As in the two last.		हतमा॑ज़ू पार्वत् मा॑ज़ू *hatamā̤j*^{ū} *pārvat mā̤j*^{ū}.
			सरस्वत् *saraswat* (N. P.)	हतबिञ् सरस्वत् बिञ् *hatabiñ saraswat biñ*.
				हतबिञ् पार्वत् मा॑ज़ू *hatabiñ pārvat mā̤j*^{ū}.

14, 15	हाय् *hāy*—य् *y*. हतय् *hatay*—य् *y*. हताय् *hatāy*—य् *y*.	In addressing female juniors or inferiors.	वछ़्रू *wạtsh*^{a}*r*^{ā}, child.	हाय वछ़रिय् *hāy watshariy* (note change of vowel). हतय् वछ़रिय् *hatay watshariy*. हताय् वछ़रिय् *hatāy watshariy*.
16, 18, 25	हतबा *hatabā*—बा *bā*.	When a woman addresses a man or woman respectfully. More especially in addressing a priest.	हिमत् *himat* (N. P.)	हतबा हिमत् बा *hatabā himat bā*.
17, 18, 25	हतबा *hatabā*—औ *au*. हतौ *hatau*—औ *au*.	Ditto, in addressing familiars or juniors (male or female).		हतबा काकौ *hatabā kākau*. हतौ काकौ *hatau kākau*. हतौ हिमत् कोलौ *hatau himat kōlau*.
19, 25	हतबा *hatabā*—अ *a*. हतौ *hatau*—अ *a*.	Ditto.	काक् *kāk*, a father. गण *gaṇ*^{a}, (N. P.)	हतबा काक *hatabā kāk*^{a}. हतौ गण *hatau gaṇ*^{a}.
20, 25	हतबा *hatabā*—अ बाय *a bāy*^{a}. हतबा *hatabā*—अ बायौ *a bayau*. हतौ *hatau*—अ	Used by women in addressing men or women by their proper names only,	महादेव् *mahādēv* (N. P.)	हतबा महादेव बाय *hatabā mahādēv*^{a} *bāy*^{a}. हतबा महादेव बायौ *hatabā mahādēv*^{a} *bāyau*.

Ref. to No. of Sūtra.	Interjection.	How used.	Word.	Form of address.
	बायो *a bāyau.*	we cannot say हतबा काक बाय *hatabā kāk° bāy°*, O father.		हतो मह्यदेव बायो *hatau mahādēv° bāyau.*
21 ~ 25	हतोव् *hatōv*—बो *au.*	Used by women in addressing a man or woman at a distance.	मनसा राम् *manasā rām* (N. P.)	हतोव् मनसा रामो *hatōv manasā rāmau*
22		Also by Musalmān women in addressing their husbands.	कादिर् *kạ̄dir.*	हतोव् कादिरो *hatōv kạ̄dirau.*
23		Not by Brāhmaṇī women, who only use the following.		
24	हत *hat°.*	Used by a Brāhmaṇī women when addressing her husband, when she is		हत *hat°.*

		alone with him, and she is near by. She does not mention his name. Merely uses the interjection.		
26	आहन् *āhan.*	May be prefixed to any of the foregoing to signify concurrence, 'yes.'		आहन्सो *āhansạ̄.* आहन्बा *āhanbā.* आहनो *āhanō.* आहन् मांजू *āhan mājŭ.* आहन् बिञ् *āhan biñ.* आहनिय् *āhaniy.* आहनू *āhanŭ.* आहनुव् *āhanuv.*
27 28 30	ह *ha.*	Used affirmatively with verbs, with the above.		आहन्सो करान् हस्यो छुय् *āhansạ̄ karān hasạ̄ chuh*, yes, Sir, he *is* doing. आहन्सो कॅरन् हस्यो *āhansā karu-n hasạ̄*, yes, Sir, he *did* do.

Ref. to No. of Sūtra.	Interjection.	How used.	Word.	Form of address.
29	न *na.*	Similarly used as a negative.		आहन्सा॑ बत हसा॑ छुह् रनान् *āhansạ̄ bat*ᵃ *hasạ̄ chuh ranān*, yes, Sir, he *is* cooking rice. नबा करान् नबा छुह् *nabā karān nabā chuh*, no, Sir, he is not doing. आहन्सा॑ नारान् हसा॑ छुह् पूथि परान् *āhansạ̄ nārān hasạ̄ chuh pūth*ⁱ *parān* yes, Sir, Nārāyaṇa *is* reading the book. आहन्बा राम हबा छुस् न्यन्द्र् करान् *āhanbā Rām*ᵃ *habā chu-s nĕnd*ᵃ*r karān*, yes, Sir, Rāma *is* having his sleep.

Two Copper-plate Grants of Ratnapāla of Prāgjyōtiṣa in Āsām.—By Dr. A. F. Rudolf Hoernle, C.I.E.

(With Plates VIII–XIII).

[Read January, 1898.]

These two grants were also sent to me by Mr. E. A. Gait, I.C.S., one in May 1896, the other in April 1897.[1] The former was found in Suālkuchī. About the find-place of the latter, nothing is known. It is now in the possession of a cultivator of Nāhorhābi village, Mauza Bargāō, District Darrang, Subdivision Tējpur, who says that it was discovered by his grandfather. As it is convenient to give it a name, and as Tējpur is already appropriated by another Āsām grant, published in this *Journal*, Vol. IX, it may be called the Bargāon copper-plate.

The Suālkuchī grant unfortunately is in a very bad condition as will be described hereafter. Without the Bargāon grant, with which most of its contents are identical, it would have been impossible to make any thing satisfactory of it. The Bargāon grant is in an almost perfect condition, and hence I will describe it first.

I. The Bargāon Grant.

This grant and its seal are just like the Gauhaṭi grant of Indrapāla. This will be seen from the photograph (Plates VIII–X), so that I need not repeat their description. The plates, of which there are three, measure $10\frac{1}{4}$ by $6\frac{3}{4}$ inches. The seal measures $4\frac{1}{2}$ by $3\frac{1}{4}$ inches. The two outside plates are only inscribed on their inner sides. The interior plate has 20 lines on each side; the other two inscribed sides have 17 and 15 lines respectively.

The language of the grant is Sanskrit. It differs from other grants, in giving a portion of the genealogy of the donor in prose. The earlier part of the genealogy, referring to Ratnapāla's ancestry, is in poetry, *viz.*, from the beginning down to line 28. From here the

1 See my papers on the previous Gauhaṭi and Nowgong Grants, in this *Journal*, Vol. LXVI, pp. 113, 285.

description of Ratnapāla's residence and person is in prose, down to line 52. The remainder is as usual: namely the description of the land, its perquisites and boundaries is in prose, *viz.*, from line 52 down line 58, and lines 58 to 64; but the genealogy of the donee is in verse, from lines 65 to 72.

The composition is very laboured; and the fact that about one-half of the royal genealogy is in prose suggests that the writer's literary powers were not equal to the task of versifying the whole.

The mechanical execution of the grant is very slovenly and inaccurate; it is, in this respect, even worse then that of the Gauhaṭī grant. Syllables are frequently omitted; thus l. 1, *duṣṭē* for *nirduṣṭair*(?); l. 13, *kṣi* for *kṣiti*; l. 15, *khim* for *kṣitim*; l. 52, *Ratnapā* for *Ratnapāla*, etc. Similarly letters are omitted: *e. g.*, l. 11, *anaya* for *anayad*; l. 22, *anurāgā* for *anurāgāj*. Occasionally superfluous syllables are inserted; *e. g.*, l. 2, *anēkīnēbhavan* for *anēkī-bhavan*; l. 8, *kuṇḍalēna* for *kuṇḍalē*. Similarly a superfluous *l* is added in l. 14, *jayal-labdha* for *jaya-labdha*, l. 45, *udbhāsanal-lāṣō*, etc. Anusvāra and visarga are very frequently omitted; see the footnotes 4, 15, 18, etc. Long and short vowels are frequently interchanged; *e. g.*, l. 3, *tāt* for *tat*; l. 6, *çrīyam* for *çriyam*, etc. For other miscellaneous blunders, see footnotes 6, 12, 43, 49, 57, 67, etc. A curiosity is the euphonic insertion of *r* in l. 11, *nu-r-iha*; and there is another instance in the Suālkucī grant, in l. 21, *mārttaṇḍa-r-iva*.

The usual provincialisms abound; for confusion of sibilants, see footnotes 16, 31, 34, 69, 85, 89, 91, etc.; for the ligature of guttural *ŋ* with sibilants, see footnotes 34, 36, 42, etc.; for the ligature of dental *n* with gutturals and sibilants see footnotes 16, 18, 28, 29, etc.; for the ligature of *m* with *v*, see footnotes 13, 44, 65, 67, etc.

The last mentioned ligature is really explained by the fact that no separate sign for *b* is used in all these Āsām grants. And this fact, again, is explained by the circumstance that in Baŋgālī and Āsāmī no distinction is made, in pronunciation, between non-conjunct *v* and *b*; both are pronounced alike as *b*. There are other indications of a more sporadic occurrence of what may be called "phonetic spelling." They are curious, as showing how far back such fashions of pronunciation may be traced. In modern Baŋgālī and Āsāmī *kṣ* is pronounced *kh*. Hence we find in l. 15 *khim* (false for *khitim*) spelled for *kṣitim*, and in l. 17, *vīkhya* for *vīkṣya*. Similarly non-conjunct initial *y* is now pronounced *j*, and conjunct *y* is omitted. An instance of the former practice occurs in l. 21, *jā* for *yā*, l. 35, *jakṣmaṇā* for *yakṣmaṇā*, also in the Gauhaṭī grant II a^1 *jaçās* for *yaçās*. An instance of the latter practice occurs in the Nowgong grant in III a^6 *Çāmāyikā*, the correct

spelling of which name *Çyāmāyikā* occurs in the Bargāon grant l. 61. Possibly the curious spelling in l. 18 *yuyyatē* for *yujyatē* may be due to a similar cause; so also the form *ya* in l. 50, for *ca*; though these would rather be survivals of an old prākritic fashion which has not survived to the present day.

Palæographically it may be noted that the avagraha occurs only four times, in ll. 26, 58, 59, 63, though there were sixteen other occasions for its use.

An *r* preceding a consonant is always formed above the line, even with *y*; *e.g.*, l. 21, *āçcaryam*.

The guttural nasal *ṅ* is, as in the Nowgong grant, throughout made without a ringlet; see ll. 3, 4, 14, 15, 17, 27, 33, 35, 41, 43, 60. The initial short *i* is also made exactly as in the Nowgong grant by means of two ringlets placed above a hook; *e.g.*, in l. 35, *Tāika*; ll. 8 and 45, *iva*; l. 24, *iti*. Also *kh* and *r* are made after the older fashion. All this shows that the Bargāon grant cannot be very far apart, in age, from the Nowgong grant.

The anusvāra, in the Bargāon grant as well as in the Nowgong grant, is formed by a ringlet, placed (in the usual way) above the line. In the Gauhaṭī grant it is occasionally placed on the line.[2] In modern Baṅgālī the latter position is universal. This shows that the Gauhaṭī grant must be appreciably later than the Bargāon and Nowgong grants.

The virāma occurs twice to indicate a final consonant in l. 23, *samyak*, with the full form of *k*, and in l. 23, *mandam* with a slightly truncated form of *m*. In both cases it is attached to the foot of the letter. In the case of final *t*, *n* and *m* specially modified forms are used; thus the final form of *t* occurs in l. 5, *jagat*, l. 7, *akārṣīt*, and l. 63, *'ghāt*. The final form of *n* occurs in l. 54, *jānapadān* and l. 55, *prabhṛtīn* and *sarvān*. The final form of *m* occurs in l. 2, *tāṇḍavīm*, l. 16, *rājyam*, l. 32, *maṇḍalam*, l. 33, *alaṅkāram*, l. 39, *sārthānām*, l. 48, *gambhīryam* and *vīryam*, l. 65 *ātmanam* and *ālyām*, ll 69 and 72, *ālyām*.

As these final forms, as well as the forms of the guttural nasal, anusvāra and *r*, are peculiarly serviceable as test-letters in determining the chronology of the Baṅgālī-Āsāmī script, I have, in the accompanying lithographed table of facsimiles (Plate XI), prepared a small conspectus of them. The reigns I have selected are the following:

(*a*) Pāla kings of Bengal (Bihār): Dharmapāla, c. 840–875 A.D., facsimile of his grant in this *Journal*, Vol. LXIII, Plate III. Nārāyaṇa Pāla, c. 925–950 A.D., facsimile of his grant in this *Journal*, Vol. XLVII, Plates XXIV, XXV;

[2] The ringlet is so small that the blank core is sometimes almost invisible in the photograph, producing the appearance of a mere dot.

also facsimile of Badal inscription in *Epigraphia Indica*, Vol. II, p. 160.

(*b*) Āsām kings: Balavarman, c. 975 A.D., facsimile of his grant in this *Journal*, Vol. LXVI, Plates XXXV and XXXVI. Ratnapāla, c. 1010, facsimile of his grant in this volume, Plates VIII–X, XII and XIII. Indrapāla, c. 1050, facsimile of his grant, in this *Journal*, LXVI, Plates III and IV. Vaidyādēva, c. 1142, facsimile of his grant in the *Epigraphia Indica*, Vol. II, Plates I–III, p. 351.

(*c*) Sēna kings of Bengal (Bihār); Vijaya[8] Sēna, c. 1080 A.D., facsimile of his grant in the *Epigraphia Indica*, Vol. I, p. 308. Lakṣmaṇa Sēna, c. 1126, facsimile of his grant in this *Journal*, Vol. XLIV, Plates I and II.

The table sufficiently explains itself; but I may point out that the special final forms of *t* and *n* have arisen from the practice of attaching the virāma to the top of the full or truncated forms, instead of appending it, in the usual fashion, to their foot; and that the special final form of *m* owes its origin to the contraction of the original square *m* into a small circle, to which the virāma was appended as a tail. Later on, this tail was separated, and thus the forms of *m* and the anusvāra become identical (No. 8 in columns 5 and 15), because in the meantime the anusvāra had assumed a tendency of standing below instead of above the head-line (No. 5, col. 5). At one time the forms of the truncated *n* and special final *m* approached so nearly as to lead to a confusion of them (compare No. 1, col. 12 with col. 15). Thus final *n* is used for final *m* twice in the Nowgong grant, see I b^2 *amalan* for *amalam*, II a^7 *yauvanan* for *yauvanam*. An earlier instance occurs in the Dharmapāla grant, line 57, *vasundharan* for *vasundharam*[5]; other instances are in the Lakṣmaṇa Sēna grant, Plate I, obverse, line 21, *layan* for *layam*; Plate II, reverse, line 21, *mantavyan* for *mantavyam*, line 22 *pālanīyan* for *pālanīyam*.

On palæographical grounds, therefore, I am disposed to place the two Ratnapāla grants in the earlier half of the 11th century A.D. (c. 1010–1050). The Nowgong grant I would place a little earlier, about 990 A.D., and the Indrapāla grant, a little later, about 1060 A.D. The Bargāon grant is not dated in any era; neither is the Suālkuci grant; but the former professes to have been issued in the 25th, and the latter in the 26th year of the reign of Ratnapāla.

Putting together the information given by the Bargāon grant with that afforded by the Tējpur, Nowgong, and Gauhaṭī grants, it now

[5] See *Epigraphia Indica*, Vol. III, p. 250.

becomes possible to arrange a fairly connected dynastic history of Āsām. All the grants agree in beginning with Hari (Viṣṇu), his son Naraka, his son Bhagadatta, his younger brother Vajradatta. They further agree[4] in stating that Vajradatta was succeeded by several members of his dynasty, after which Naraka's dynasty was displaced by Çāla Stambha, described in the Bargāon grant as a *Mlēccha*[5] or 'foreign' conqueror. According to that grant, Çāla Stambha was succeeded by twenty other foreign kings, of whom Vigraha Stambha was the first, and Tyāga Siṁha the last; and the grant adds that after Tyāga Siṁha the ancient dynasty of Naraka was restored in the person of Brahma Pāla. Unfortunately the Tējpur grant is unsatisfactorily recorded in volume IX of this *Journal*, both with respect to the original text and its English translation. But this much seems to be clearly stated in it that a series of rulers, commencing with Çāla Stambha, ended with Çrī-Hariṣa, after which a king called Pralambha of Naraka's race succeeded to the throne. On the first view this would seem to show that Tyāga Siṁha and Çrī-Hariṣa were the same persons, and so also Brahma Pāla and Pralambha. The latter identification, of course, is impossible, because Brahma Pāla and Pralambha gave rise to two distinct dynasties, as the Bargāon and Nowgong grants show. But it is still possible that these two dynasties might have ruled contemporaneously, in different parts of the country, on Çāla Stambha's dynasty becoming extinct with Tyāga Siṁha *alias* Çrī-Hariṣa. This supposition would seem to derive some confirmation from the fact that the Bargāon and Gauhaṭī grants are given from the town of *Durjayā*, alias Prāgjyōtiṣa, while the Nowgong grant is given from the "ancestral camp" of Hārūppēçvara. Against this, however, is to be set the fact that Bala Varman (of the Nowgong grant) of the Harjara or Pralambha dynasty is also described on his seal as belonging to the dynasty of the kings of Prāgjyōtiṣa, so that Prāgjyōtiṣa would seem to have been the capital of his country, though he usually or occasionally resided in his "ancestral camp" Hārūppēçvara. But the circumstance which most strongly makes against the identification of Tyāga Siṁha with Çrī-Hariṣa, is the palæography of the Nowgong grant. The author of that grant, Bala Varman, is the fourth in descent from Harjara, and the fifth in descent from Pralambha, *i.e.*, about 100 years after the commencement of his dynasty, while Ratna Pāla, the author of the Bargāon grant, is first in descent from Brahmapāla, *i.e.*, perhaps 20

[4] Except the Gauhaṭī grant, which, however, allows an "undefined period."

[5] The term *Mlēccha* indicates a Non-Hindū, though the name Çāla Stambha has a distinctly Hindu (Sanskrit) ring; so have the other names of his dynasty. They may be *birudas* or laudatory names.

years after the beginning of his dynasty. It follows, therefore, that Bala Varman comes about 80 years after Ratna Pāla, and that palæographically the Nowgong grant should be later than the Bargāon grant. Their palæographic characters, however, indicate just the reverse. The identification of Tyāga Simha with Çri-Harisa, therefore, seems to me very doubtful; nor does it appear that there is any necessity for it. A more probable solution appears to me to be, that Çāla Stambha's dynasty ended with Çri-Harisa, and that it was succeeded by another foreign dynasty, which commenced with Pralambha and ended with Tyāga Simha, after whom the restoration of Naraka's dynasty, in the person of Brahma Pāla, took place. The Bargāon grant does not say that the 20 kings who followed Çāla Stambha were all of the same dynasty; on the other hand, twenty-one (including Çāla Stambha) is a sufficiently large number to accommodate two long dynasties. Moreover the Nowgong grant clearly indicates that a break or change of dynasty took place with Harjara (son of Pralambha).

Of Çāla Stambha's dynasty three other members are named: according to the Bargāon grant, Vigraha Stambha was the immediate successor (son?) of Çāla Stambha; and according to the Nowgong grant, there were two other members, named Pālaka and Vijaya, besides some more not named. It would seem that *Stambha* was the distinguishing name of this dynasty. The named members of it would be (1) Çāla Stambha, (2) Vigraha-Stambha, (3) Pālaka-Stambha, (4) Vijaya-Stambha, who were perhaps the first four of the dynasty; there were several others; the total number may have been ten, occupying a period from about 150 to 200 years.

Of Pralambha's dynasty, five other members, in direct filial succession, are named. According to the Tējpur grant, it would seem that Pralambha's son, by his wife Jīvadā, was Harjara, whose son was Vanamāla. The Nowgong grant adds Jayamāla, Vīrabāhu and Bala Varman, being the son, grandson and great-grandson respectively of Vanamāla. These are the first six members of the dynasty. Their total number may well have been eleven, occupying again a period of about 150 to 200 years. And these eleven, together with the ten of the Çāla Stambha dynasty, would make up the series of twenty-one foreign kings, required by the Bargāon grant, antecedent to the restoration of the Pāla kings of Naraka's dynasty. There are two difficulties about this dynasty. The Tējpur grant seems to say distinctly that Pralambha belonged to Naraka's dynasty,[6] and that

[6] In verse 19 of the translation, Vanamāla, the son of Harjara, is also said to be "like the moon in the clear sky of the Naraka line." The original text has *kṣiti-tanaya-nṛpati-vaṁça* or 'the royal race of the son of the Earth.' Naraka is the "son of the Earth."

he was the father of Harjara. On the other hand, the Nowgong grant ignores Pralambha altogether, and commences the dynasty with Harjara. Nor is there any thing in the latter grant to connect him with Naraka's dynasty; on the contrary the non-Hindū sound of the name Harjara points to a foreigner. I am unable to suggest any satisfactory solution; but the weight of the evidence seems to me to be for both dynasties (Çāla Stambha's and Harjara's or Pralambha's) being those of foreign invaders, though they may have occasionally preferred a claim to belong to the ancient indigenous line of kings.

The Pāla dynasty distinctly put forward that claim in both the Bargāon and Gauhaṭī grants; though it may still remain a question whether the claim was well founded. I may here notice a correction. In the Gauhaṭī grant, Plate I, reverse, line 13, the puzzling name *Kaumra* should be *Bhauma* or 'Earth-born,' a name of Naraka. I may also notice, that the Bargāon grant distinctly states that Durjayā, which the Nowgong grant describes as a *nagarī* or 'townlet' and as the *vasati* or 'residence' of the king, received that name from Ratnapāla, who either founded it or made it into a fortified place, and fixed it as the residence of his dynasty. The fact that the Pāla kings resided in the fort of Durjayā, and the Harjara dynasty in the "ancestral camp" of Hārūppēçvara, while yet both dynasties called themselves "Lords of Prāgjyōtiṣa," may perhaps justify the conclusion that in their time Prāgjyōtiṣa, which was originally the name of a town, had become the name of a country.

Of Ratnapāla it is related that he came into hostile contact with the kings of Gurjara, Gauḍa, Kērala, and the Dekkan, and with the Bāhikas and Tāikas. Assuming that Ratnapāla's age has been rightly fixed at about 1010 to 1050 A.D., the king of Gurjara of that period would be the Western Cālukyan king Jayasiṁha III or Sōmēçvara I. By the Kērala king the Cōla Rājarāja is perhaps intended. The Gauḍa king may have been Mahīpāla or Nayapāla of the Pāla dynasty of Bengal and Bihār. To whom the term "king of Dakṣiṇātya" or the Dekkan may refer, I do not know. The Bāhikas and Tāikas are generally taken to be Trans-Indus people, those of Balkh and the Tajiks. But, as will be seen from the next paragraph, the panegyrist probably only wished to parade his familiarity with Sanskrit literature, and further attempts at identification would be waste of labour.

There is again a curiosity to be noted in the Ratnapāla grants, similar to that in the Nowgong grant (see *ante*, Vol. LXVI, p. 288), the discovery of which is due to Dr. Th. Bloch, the Society's Honorary Philological Secretary. This is the existence of plagiarisms, or at least imitations, from Bāṇa's Harṣa Carita. The following passages,

or clauses, may be compared, the references being to Tukaram Javaji's Bombay edition of 1892 (Nirṇaya Sāgara Press).

(1). Bargāon Plate, line 34, *Gurjjar-ādhirāja-prajvārēṇa*, etc. Compare Harṣa Carita, p. 132, *Hūṇa-hariṇa-kēsarī Sindhu-rāja-jvarō Gurjara-prajāgarō Gāndhār-ādhipa-gandha-dvipa-kūṭa-pākalō Lāṭa-pāṭava-pāṭaccarō Mālava-lakṣmī-latā-paraçuḥ.*

(2). Bargāon Plate, line 43, *Vāsav-āvāsa-sparddhini.* Compare Harṣa Carita, p. 104, *Vāsav-āvasa iva (adhivāsaḥ).*

(3). Bargāon Plate, line 48, *Arjjunō yaçasi Bhīmasēnō yudhi* (or Suālkuci Plate, l. 24, *Bhīṣmō dhanuṣi*), &c. Compare Harṣa Carita, p. 110, *Arjunō yaçasi Bhīṣmō dhanuṣi*, etc.

Finally, I may add three corrections in the Gauhaṭi grant. The blundered phrase *bhūmya-pakṣa-ṣta* in II *b*[6] should be *bhūmy-apakṛṣṭa*, as in the Bargāon grant l. 53; it means the 'inferior or non-arable land.' Also *vyāvahārika* in II *b*[7] means 'officer': the whole passage in which it occurs should be translated as in the Bargāon grant. Again the phrase *mahiṣī-jātika* should be read, as in the Suālkuci grant, *mahiṣ-āj-āvika* 'buffalos, goats and sheep.'

Text.[1]

First Plate: Reverse.

1 Svasti | [2] Duṣṭē [3] vapu-vimv(b)akair=n=nakha=gatai[4] svai[5]=n=nṛtya-sampad-vidhēḥ sō sa-çvēva[6]-gatiṁ çubhāṁ prakaṭayan=dṛçyō 'ni-

2 çan=tāṇḍavīm | ēvaṁ yaḥ paramātma-vat=pṛthu-guṇ-ōddōhō[7] 'py=anēkī-nē[8]-bhavan=prākāmyan=dadhad=ēva bhāti bhuvan-ē-

3 ças=tāt[9]=çriyē Çaṇkaraḥ || [1 ‖] Mūrttā kiṁ vahat=iha[10] çīta-kara-ru kiṁ[12] sphāṭikī-vidrutiḥ kim[13]=v=ādy-augha-vibhēdan-ai-

4 ka-niratā çakti[14] çubhā Çaṇkari | yasy=āpāṇ-gatim=ity=avētya janatā yāyēta dhanyā drutaṁ pāyāt=sa praṇiha-

1 From the original plates.

2 Metre of verses 1 and 2: *Çārdūla-vikrīḍita.*

3 One akṣara is here omitted; perhaps read *nirduṣṭair.*

4 Read *gataiḥ*; l. 4, *çaktiḥ*; l. 5, *ākṛtēḥ*; l. 10, *çriḥ* and *guṇaḥ*; l. 12, *yaçaḥ*; l. 13, *ātmajaḥ* and *ripuḥ*; l. 14, *kirttiḥ.*

5 Read *svair.*

6 Read *çvēta.* See note to translation.

7 *Uddēha* is not noted in any dictionary.

8 Read *anēki-bhavan*; *nē* is superfluous.

9 Read *tat-çriyē* or rather *tac-chriyē.*

10 Read *īha*, m. c. (i.e., *vahati iha*).

12 Read *kara-ruk-kiṁ.*

13 Read *kiṁ vā.*

5 tya sarvva-kaluṣaṁ lauhitya-sindhur=jagat ॥ [2 ॥][14] Dharāṁ **Harōr**=
uddharataḥ kir-ākṛtō[4] payōdhi-magnā **Nārakō**[15] 'sur-ānsa-
6 ka[16] | sa sūnur-āçīt[17]=sura-yōṣid-anginī[18] çrīyam[19]=pratindūyitam[20]
=ēva yēna hi ॥ [3 ॥] Yaç[21]=c=āval=ēti jarat=īti bhiyā-yut=ē-
7 ti mūḍh=ēti v(b)andhu-rahit=ēti vipad-gat=ēti | hitv=Āditīs ×[22] vaji-
tya surān=ahārṣīt tat-ku-
8 ṇḍalēna[23] sura-yaçō-mahaçī iv=āgryē | [| 4 ॥] Kāntā-mukhair=
v=v(b)ahu-vidhāv[24]=iva vīra-vṛṇḍais=tējasvibhī
9 ravi-gaṇān=iva sandadhānē | Prāgjyōtisē[25] 'vasad=asau pravarē
purāṇāṁ dōr-dappa[26]-saṁcaraṇa-
10 cārutar-ārjjita-çrī[4] ॥ [5 ॥] Yuddhē purātana it=iddha-guṇa[4] pit=
ēti yāvad=vicintya kṛpayā sa
11 cacāra maudam | tāvad=Dharis=tam =anaya[27]=divam=ātitānsōs[28]
=tējānsy[29]=ahō nu r[30]=iha nō gaṇan=ā-
12 sti v(b)andhau | [16 ॥] Dhīras=tatas=tata-yaça[4]-paṭa-guṇṭhi-āçō[31]
yaç=c=āpir aktam=akarōd=bhuvanaṁ guṇ-aughaiḥ | bhavyaḥ sa
bhūri-vibha-
13 vō **Bhagadatta**-nāmā tasy=ātmaja[4] kṣi[32]-dhurāṁ v(b)ibharāṇ=cakā-
ra ॥ [7 ॥] vajr=īva nirjjita-ripu[4] pṛthu-vajra-kāntiḥ sv-ōrjj-ārj-
javā-
14 rjjita-jagaj-jaya[33]-lav(b)dha-kīrtti[4] | rājyan=tad=āpa rucam=astam-
itē khar-āṇsau[34] bhrātuḥ çikh=īva valavān=n=iha **Vajra-dattaḥ**

14 Metre: *Vaṁça-sthavila.*

15 Read *magnāṁ narakō.* Perhaps the intended reading was *magnān=narakō.*

16 Read *āṁçakaḥ.*

17 Read *āsīt.*

18 Read *aṅginīṁ.*

19 Read *çriyam.*

20 Perhaps read *pratīndūyitam,* (i.e., *prati indūyitam*).

21 Metre of verses 4–8: *Vasanta-tilakā;* but the second half of verse 4 is out of order, its first pada having only 13, while its second pada has 15 instants.

22 This akṣara is illegible; there is also here one short instant wanting; perhaps read *Aditiṁ samavajitya,* or *Aditīçān=avajityā.*

23 There is here one short instant in excess; read *kuṇḍalē,* omitting *na.*

24 Read *vidhān.*

25 Read *Prāgjyōtiṣē.*

26 Read *darppa.*

27 Read *anayad.*

28 Read *ātitāṁsōs.*

29 Read *tējāṁsy.*

30 Here *r* is inserted in order to avoid the hiatus *nu iha.*

31 Read *āṁsō*

32 Here one short akṣara is omitted. Read *kṣiti.*

33 Read *jaya,* and below, l. 30, *luṇṭana,* and l. 45, *ōdbhāsana;* omitting *l.*

34 Read *kharāṁçau.*

15 ॥ [8 ॥] [35] Ēvaṁ vaṇça[36]-kramēṇa khiṁ[37]=atha nikhilāṁ bhuñjatā[38]
nārakāṇāṁ rājñā[38] mlēçch-ādhināthō vidhi-calana-vaçād=ēva ja-
16 grāha rājyam | **Çālastambha**[39] kramē 'sy=āpi hi narapatayō
Vigrahastambha-mukhyā vikhyātā[39] samv(b)abhūvur=dvi-guṇi
[40]-daçatā
17 saṁkhyayā saṁvibhinnā[39] ॥ [9 ॥] [41]Nirvvaṇçaṁ[42] nṛpam=ēkaviṁ-
satitamaṁ[42] çrī-**Tyāga-siṁh**-āsidhan[43]=tēṣām=vikhya[44] divaṇ=
gataṁ punar=a-

Second Plate: Obverse.

18 hō bhaumō hi nō yuyyatē[45] [1] svām=iti[46] pravicintya tat-prakṛtayō
bhū-bhāra-rakṣā-kṣamaṁ sāgandhyāt=paricakrirē narapa-
19 ti[39] çrī-**V(b)rahmapālaṁ** hi yaṁ | [| 10 ॥] Ēkō 'sau jitavāṅ=ṛpuṇ[47]=
samiti bhō ki[39] nāma citra[39] nidaṁ[48] atr=ōdāharaṇaṁ Harō Ha-
20 ri=ahō Bhīṣm-ādayō 'nē[49] pi hī | itthaṁ[50] samparimṛçya yasya hi
bhaṭā sthāna-sthitasya dviṣāṁ dikṣv=aṣṭāsv=api vidra-
21 vēṇa mahat=āçcaryan[51]=sadā mēnirē ॥ [11 ॥] [52] Vibhava-phala-
vilās-āsvāda-jāt-ābhilāṣa[53] sa yuvatim=upayēmē j[54]=ā-
22 nurāgā[55] janēṣu | avani-kula-samuttha[56]-kṣmāpa-samprātya[57]-lakṣ-
myāḥ sthitam=iva kula-dēvī-nāmadhēyam=v(b)abhāra ॥ [12 ॥]

35 Metre of verse 9: *Sragdharā.*
36 Read *raṁça.*
37 One short akṣara is wanting. Read *kṣitim.*
38 Read *bhuñjatām* and *rājñām.*
39 Read *Çālastambhaḥ*, and *vikhyātāḥ*; l. 17, *saṁvibhinnāḥ*; l. 19, *narapatiṁ*, *kiṁ* and *citraṁ.*
40 One akṣara is wanting. Read *dviguṇita.*
41 Metre of verses 10 and 11: *Çārdūla-vikrīḍita.*
42 Read *nirvaṁçaṁ* and *ēkaviṁçatitamaṁ.*
43 Read *ābhidhan.*
44 Read *tēṣām vīkṣya.*
45 Read *yujyatē* or *yūyatē.*
46 Read *svām=iti.*
47 Read *ripuṁ* or *ripūn.*
48 Read *nidām* or *nvidam* (i.e., *nu idaṁ*).
49 Read *'nyē* (for *anyē*).
50 Read *itthaṁ.*
51 Read *āçcaryaṁ.*
52 Metre: *Mālinī.*
53 Read *ābhilāṣaḥ*; l. 27, *anubhāvāḥ.*
54 Read *yā.*
55 Read *nurāgāj* (i.e., *yā anurāgāj=janēṣu*).
56 Read *samuttho.*

23 [68] Ratn-ōpamā narapati[69] sva-guṇair=m=mah-ārhān=yaḥ pālayēd=
iti jannair=avagamya samyak | nītaḥ prasiddhim=iha tō-
24 ua sa-kīrttanēna çrī-**Ratnapāla** iti sūnur=ajāyat=āsyāṁ[60] || [13 ||]
Durvvāra-vairi-kari-kumbha-bhidā-bhav-āsra-srōtō-va-
25 h-āhati-calat-kari-muktikābhiḥ [|] yad-yuddha-bhūmi=v=vipaṇi-vad=
dhata-pādma-rāgī çōbhōta[61]
26 vīra-vaṇijā[62] nikarai[62] prakīrṇṇā || [14 ||] Siṁhāsanē 'thā[63] Narak-
ānvaya-j-āv(b)ja-bhānu[64] samvēçya[65]
27 tāṁ[66] ḍivam=agād=a-kalaṅka-gaṇḍaḥ | kāl-ōcitaṁ vicarituṁ hi mah-
ānubhāvā[58] samvidri-
28 tē[67] hi guṇa-dōṣa-vidō bhavasya || [15] [68] Niçit-āsi-marīci-mañjarī-
jaṭila-bhuja-v(b)ala-vi-
29 jita-narapati-sat[69]-ōpāyanī-kṛta-sa-mada-gaja-ghaṭā-kaṭa-syāndi[70]-
dān-āmv(b)u-çīkar-āsā-
30 ra-samupaçamita-santāpaṁ sakal-āri-kaṭaka-luṇṭanal[71]-lampaṭa-su-
bhaṭa-v(b)āhu-viṭap-āṭavī-
31 saṁkaṭam=api mahājana-nivāsa-yōgyaṁ[60] | sa-mada-sundarī-smita-
sudhā-dhavalita-saudha-çi-
32 khara-sahasr-ānta-hṛta[71]-taraṇi-maṇḍalam | Malay-ācala-sthali[72]-
ruha-kānanam=iv=ānēka-bhōgī[73]-çata-sēvitaṁ[60] | nabhō-
33 **vat**=sēv-āvāpta-v(b)udha-guru-kāvy-ālaṅkāram | kailāsa-giri-çikha-
ram=iva paramēçvar-ādhisthānaṁ[60] | Vittēça-nivēṣita-
34 ā=ca | yac=ca Çaka-krīḍā-çani[74]-dṛḍha-pañjarēṇa Gurjjar-ādhirāja-
prajarēṇa[75] dur-d danta[76]-Gauḍēndra-kari-kūṭa-pākalēna

[67] Read *samprāpya*.
[68] Metre of verses 13–15: *Vasanta-tilaka*.
[69] Read *ratnōpamō narapatiḥ* as in the Suālkuchī grant.
[60] Read final *m* for *ṁ*. Also read *ādhiṣṭhānam*.
[61] Read *çōbhēta*, as in the Suālkuchī grant.
[62] Read *vaṇijāṁ nikaraiḥ* as in the Suālkuchī grant.
[63] Read *'tha*.
[64] Read *bhānuṁ*, which is the reading of the Suālkuchī grant.
[65] Read *saṁvēçya*.
[66] Read *taṁ*.
[67] Read *saṁvidvatē*.
[68] From here prose.
[69] Read *çat*.
[70] Read *syandi*.
[71] Probably read *antar-hita*.
[72] Read *sthali*.
[73] Read *bhōgi*.
[74] Read *çakuni*, as in the Suālkuchī grant.
[75] Read *prajvarēṇa*, which is the reading of the Suālkuchī grant.
[76] Read *dānta*.

35 Kēral-ēç-ācalā-çilājatunā V(b)āhika-Tāik-āttaṇka[77]-kāriṇā dākṣiṇā-
tya-kṣōṇi-pati-rājajanmaṇā[78] kṣa-
36 pit-ārāti-pakṣatayā kṣitipa-vakṣaḥ-kavāṭa-paṭēn=ēva prākāṛēṇ=
āvṛta-prāntham[79]=unmada-kala-hansa[80]-kāminī-ku-
37 la[81]-kuṇita-pēçala-maṛun-mand-āndōlit-ōrmmi-çikarair=upaçamit-
āpāvṛta-sandha-çikhar-ādhirūḍha-sundarī-**sura-**

Second Plate: Reverse.

38 t-ōtsav-āyāsēna kailāsa-kari-dukula[82]-kadalikā-paṭē[83] nēka-nākēça-
kāminī-vibhrama-maṇi-darppaṇē-
39 na Lauhity-āmbhōdhinā virājamānaṁ[60] | mānanīyam=anēka-**mana-**
ka[84]-pati-sārthānām yathārth-ābhidhānaṁ
40 Prāgyōtiṣ-ēṣa[85]-durjay-ākhya-puram=adhyuvāsa | yatra ca jaḍatā
hāra-yaṣṭiṣu n=ēndriyēṣu cañcalatā hari-
41 ṣu na mānasēṣu bhaṇguratā bhruvi bhramēṣu na pratipannēṣu
s-ōpasarggatā dhātuṣu na prajāsu vāmatā kāmi-
42 nīṣu skhalitaṁ madhu-mada-mudita-kāminī-gatiṣu nispṛhatā dōṣa-
kāriṣu niratyaya-madhu-pān-āçaktir[86]=m=ma-
43 dhu-kāra-kara[87]-kulēṣu atyantaṁ pṛy[88]-ānuvarttanaṁ rathāṇga-
nāmasu piṣit[89]-āçitā çvāpadēṣu tatra Vāsap-āvā-
44 sa-sparddhinī[90] vidhur=iva vivarddhita-çīla-vēlā-jaladhi-maṇḍalaḥ
satru[91]-saras-ādarçita-padm-āpahāraç=ca mārtta-
45 ṇḍa iva bhū-bhṛc-chirō-nivēçita-pādaḥ kamal-ākar-ōdbhāsana[92]-
lāṣaç[92]=ca paramēçva-

77 Read *bāhika-tāyik-ātaṇka* or *bāhlika-tāyik-ātaṇka*.

78 Read *yakṣmaṇā*.

79 Read *prāntam*.

80 Read *haṁsa*.

81 In the original *kula* is only just traceable, but in the Sālkuchī grant it is distinct.

82 Read *dukūla*.

83 Probably read *paṭēn = ānēka-*

84 Perhaps read *mānaka*.

85 Read *Prāgjyōtiṣ-ēça*.

86 Read *āsaktir*. In the original the first *ā* of *pānāçakti* is cancelled; but the real intention may have been to cancel the second *ā*; for *pāna-sakti* would give the same meaning.

87 Cancel *kara*.

88 Read *priy-*.

89 Read *piçit*.

90 Read *Vāsav-āvāsa-sparddhini*.

91 Read *çatru*.

92 Read *lāsaç*.

46 rō'pi Kāmarūp-ānandi[93] Bhaum-ānvayō 'py=ullāsita-dānav-āriḥ puruṣ-ōttamō 'py=a-da-

47 nārddanō[94] vīrō 'pi mattēbha[95]-gāmī yasā[96] ca Manmath-ōnmāthi-rūpaṁ tiraskṛt-āmbhōdhi-

48 gāmbhīryam jagad-vijay-āçansi[96]-vīryam Skand-āskandi-vīryam yaç=c=Ārjjunō yaçasi[97] Bhī-

49 masēnō yudhi Kṛtāntaḥ krudhi Dāvānalō vipakṣa-vīrudhi Çaça-dharō vidyā-nabhasi Ma-

50 lay-ānilaḥ su-janu-sumanasi Sūryō 'ri-tamasi Uday-ācalō mitr-ōd-gama-sampadi ya[98] |

51 mahārāj-ādhirāja-çrī-**V(b)rahmapāla-varmma-dēva**-pād-ānudhyā-ta-paramēçvara-parama-bhaṭṭārakō

52 mahārāj-ādhirājaḥ çrī-**Ratnapā**[99]**-varmma-dēvaḥ** kuçalī ॥ ✣ ॥ Uttara-kūlē trayōdaça-grāma-viṣay-āntaḥpāti-Vā-

53 madēva-pāṭak-āpakṛṣṭa-bhūmi-samēta-lābu-kuṭi-kṣētrā[100] dhānya-dvi-sahasr-ōtpattika-bhūmau | yathāyathaṁ samupasthi-

54 ta-v(b)rāhmaṇ-ādi-viṣaya-karaṇa-vyāvahārika-pramukha-jānapadān rāja-rājñī-rāṇak-ādhikṛtān=anyān=api rā-

55 janaka-rājaputra-rājavallabha-prabhṛtīn yathā-kāla-bhāvinō'pi sarvvān mānanā=pūvvakaṁ[101] samādiçati viditam=a-

56 [stu] bhavatāṁ bhūmir=iyam[102]=vāstu-kēdāra-sthala-jala-gōpracār-āvaskar-ādy-upētā yathā-saṁsthā sva-sīm-ōddēça-paryantā

57 hasti-v(b)andha-naukā-v(b)andha-caur-ōddharaṇa-daṇḍa-pāç-ōpari-kara-nānā-nivitt[103]-ōtkhēṭana-hasty-açv-ōṣṭra-gō-mahiṣ-āj-āti-

Third Plate: Obverse.

58 ka[104]-pracāra-prabhṛtīnāṁ[102]=vinivārita-sarvva-pīḍā çāsanī-kṛtya | Pārāsarō 'bhūd=bhuvi Dēvadattaḥ Ka-

59 ṇvō 'grajō Vājasanēyak-āgryaḥ | āsādya yam[102]=vēda-vidāṁ par-ārddhyaṁ trayyā kṛt-ārthāyitam=ēva samya-

93 Read *ānandi*.
94 So also the *Suālkuci* grant; but read *ojanārddanō*.
95 Read *mattēbha*.
96 Read *yasya*.
97 Read *āçaṁsi* and *yaçasi*.
98 Read *ca*. *Ya* may be a Prākrit form, if it is not simply a clerical error.
99 Read *Ratnapāla*.
100 The reading is false; perhaps read *kṣētrāyāṁ*, agreeing with *bhūmau*.
101 Read *pūrvvakaṁ*.
102 Read *iyaṁ*; l. 58, *prabhṛtināṁ*, and l. 59, *yaṁ*.
103 Read *nimitt*.
104 Read *āvika*, as in the Suālkuci grant.

60 k ॥ [1 ॥] Agny-āhitas=tasya v(b)abhūva sūnuḥ Sadgaṇgadattō[105] guṇa-çīla-çāli [।] yaṁ vīkṣya śaṭ-karmma-rataṁ dvijēṣaṁ[106]

61 Bhṛgv ādiṣu pratyayitō jan-aughaḥ ॥ [2] Çyāmāyikā tasya v(b)abhūva patnī pati-vratā çīla-guṇ-ōpannā[107] । ugrēndu-

62 lēkh=ēva virājatē yā viçuddha-rūpā tamasō nihantrīṁ[108] ॥ [3 ॥] Āsyāṁm[109]=abhūc=chāstra-vidāṁ dhurīṇas=trastraḥ[110] su-

63 tō 'ghāt khalu Vīradattaḥ । yaṁ prāpya dharmam-āçrayam=ugrav(b)uddhiṁ kālaḥ kalir=uyak-kṛta-vad=v(b)abhūva ॥ [4 ॥] Saṁkrāntau

64 Vipṇupadyāñ[111]=ca pañca-viṁç-āv(b)da-rājyakō¶ tasmai dattā mayā pitrōr=yaçaḥ-puṇyā-

65 ya c=ātmanam[112] ॥ [5 ॥] Sīmā pūrvvēṇa vṛhad-ālyām çālmalī-vṛkṣaḥ । pūrvva-dakṣiṇēna rū-

66 ṣi-gaṇa-pāṭhī-nau-sīmni khara-taṭa-stha-çālmali-vṛkṣaḥ ॥ dakṣiṇēna tan-nau-sīmni

67 v(b)adarī-vṛkṣaḥ । dakṣiṇa-paçcimēna ta[113]-nau-sīmni kāçimv(b)ala-vṛkṣaḥ । paçcimēna

68 khara-taṭa-sth-āçvatha-vṛkṣaḥ । paçcima-ga । uttara-ga-vakrēṇa āli[114] । kāçimv(b)a-

69 lā[115]-vṛkṣaç=ca । paçcim-ōttarēṇa kṣētr-ālyām hijjala-vṛkṣaḥ । pūrvva-ga । uttara-ga-va-

70 krēṇa kṣētr-āli[114] । çālmalī-vṛkṣau । punaḥ pūrvva-ga-dakṣiṇa-ga-vakrēṇa kṣētr-āli[114] । kāçimv(b)ala-vṛkṣau । ki-

71 ñ-cit-pūrvva-ga । dakṣiṇa-ga-vakrēṇa kṣētr-āli[114] । çalmali-vṛkṣau । uttarēṇa vṛhad-ālyāṁ kāçimv(b)ala-vṛ-

72 kṣaḥ । uttara-pūrvvēṇa vṛhad-ālyām vētasa-vṛkṣaç=c=ēti ॥

The Seal.

1 Svasti Prāgjyōtiṣ-ādhipati-

2 mahārāj-ādhirāja-çrī-**Ratna-**

3 **pāla**-varmma-dēvaḥ ॥

105 Read *Sadgaṇgādattō.*

106 Read *dvijēṣu*, the anusvāra is nearly obliterated. Perhaps it might also be intended for *dvijēçaṁ.*

107 Read *ōpapannā.*

108 Read *nihantrī.*

109 Omit the anusvāra.

110 Read *trastaḥ.* The second r, however, appears to be slightly obliterated.

111 Read *Viṣṇupadyāñ.*

112 Read *ātmanaḥ.*

113 Read *tan.*

114 Read either *ālis* or *āli.* There is in the original plate a trace of the long *i* in line 11.

115 Read *kāçimbala.*

TRANSLATION.

(FIRST PLATE: line 1) Hail!

(Verse 1.) "He may be seen incessantly exhibiting his beautiful white figure,[1] in the Tāṇḍava (dance) according to the strict rules of that dance, (guided) by the stainless reflection of his body formed on his own nails: even thus does Çaṇkara (or Çiva), who, though like the Supreme Being he is endowed with the quality of omnipresence (lit., expansion), assumes numberless forms at his absolute will, shine forth as the Lord of the World for the sake of the welfare of that (world).

(2.) "What? Is it that here flows the light of the white rays (of the moon) in congelation, or a solution of crystals; or is it that the beautiful Çaṇkarī (or female counterpart of Çiva) and his Çaktī (or energy) is intently engaged in marking quick-time music in its primeval form?"[2] It may be with such musings as these about the nature of its water that the happy population (of the country) quickly resorts to that river Lauhitya (or Brahmaputra), which by removing all sins protects the world.

(Verse 3.) Of **Hari** (*i.e.*, Viṣṇu) who, in the form of a boar, raised the earth when she had sunk beneath the ocean, Naraka of the Asura (or demon) race was the son, who acted the very part of the moon to the personal charms of the ladies of the Suras (or gods);[3]

(4.) Who, declaring Aditi to be a woman, weak, decrepit, timid, stupid, deserted by her kinsmen, and overtaken by misfortune, conquered the Suras, and snatched away her ear-rings which were precious as being typical of the glory of the Suras.

(5.) In Prāgjyōtiṣa, the best of towns, provided with brilliant troops of warriors like systems of suns, and lovely-faced women of many kinds, he took up his residence, after he had acquired prosperity, equal in pleasantness to the pride of his arms.

(6.) "I am grown too old (to engage) in war, and my father will gain a brilliant reputation," bethinking himself thus, out of kindly consideration, he lived carelessly: so Hari removed him to heaven.

[1] The reading *sōsaçvēva* appears to be corrupt, and I can make nothing satisfactory of it. The Suālkucī grant here fails to help. I have taken *sō* as prakritic for *sa*; compare *aste*, line 50, *ya*, footnote 97.

[2] Or, as Dr. Bloch suggests, it may be translated: "intently engaged in dividing the original current," of the heavenly Ganges in Çiva's matted hair according to the well-known mythological story.

[3] The moon beholds the charms of the Apsarases; so did Naraka, of whom it is related that he "seized the daughters of the Gandharvas and of gods and men, as well as the Apsarases themselves." See Dowson's Classical Dictionary of Hindu Mythology, *sub voce* **Naraka**. Suggestion of Dr. Bloch.

Alas! for one who is keenly desirous of glory there is truly in this world no counting of kinship.[4]

(7.) Then his wise son, **Bhagadatta** by name, whose shoulder was girt with the mantle of far-reaching glory, and who by the multitude of his good qualities won the affections of the (whole) world, carried upon himself the burden (of the government) of the country with propriety and much prosperity.

(8.) Then the mighty **Vajradatta,** having like Vajrin (*i.e.*, Indra), conquered his enemies, being in beauty like a large diamond, and enjoying the reputation of having achieved the conquest of the world through his own honesty and energy, obtained that kingdom of his brother, just as fire (attains) brilliancy on the setting of the sun.[5]

(9.) After thus, for several generations, kings of Naraka's dynasty had ruled the whole country, a great chief of the Mlecchas, owing to a turn of (adverse) fate, took possession of the kingdom. (This was) **Çālastambha.** In succession to him also there were chiefs, altogether twice ten (*i.e.*, twenty) in number, who are well-known as **Vigraha-stambha** and the rest.

(10.) Seeing that the twenty-first of them, the illustrious chief **Tyāga Siṁha**[6] by name, had departed to heaven without (leaving) any of his race (to succeed him),

(Second Plate: obverse:) his subjects, thinking it well that a Bhauma (*i.e.*, one of Naraka's race) should be appointed as their lord, chose **Brahmapāla,** from among his kindred, to be their king on account of his fitness to undertake the government of the country.[7]

[4] Naraka is said to have been slain by Kṛṣṇa, who is an incarnation of Viṣṇu or Hari. The latter was Naraka's father: hence the father slew his son. The poet represents this as a sort of voluntary sacrifice on the part of Naraka, who feeling himself too old for his accustomed warlike exploits, purposely, *i.e.*, out of consideration for his father, lived in a careless fashion in order to afford his father an opportunity of slaying him, so that his father (Viṣṇu) might have the reputation of having slain the much-feared demon Naraka. The poet, however, cannot refrain from adding a word of disapproval of Viṣṇu's conduct in setting aside the claims of kinship for the sake of earning a reputation. This explanation was substantially suggested to me by Dr. Bloch.

[5] There is here a play on the word *vajra*, which means both 'the thunderbolt and 'a diamond.' Indra is called *vajrin*, or 'the wielder of *vajra* or 'the thunder bolt;' and Vajradatta or 'the gift of Vajra' is said to be as beautiful as a *vajra* or 'diamond.'

[6] The meaning apparently is that the whole series consisted of 21 members viz., Çālastambha, 19 others, and Tyāga Siṁha. It is not clear whether the name of the last king is *Çri-tyāga* or *Tyāga*.

[7] Verses 10 and 11 are two relative sentences (with *yam* and *yasya*) dependent on the demonstrative *sa* in verse 12.

(11.) "Single-handed he overcame his enemy in battle: why indeed should this appear strange to his detractors, (seeing that) on this point Hara and Hari are examples, and Bhīṣma and indeed many others besides." Thus arguing, his warriors have always thought very highly of (the conduct of) their home-staying (king), seeing that his enemies fled away in all eight directions.[8]

(12.) His desire being stimulated by the taste of the joys due to his prosperity, he married a young woman who by reason of her devotion to her people bore the name of Kuladēvī, which is, as it were, the standing name for Lakṣmī (or 'good fortune') attainable by (all) rulers sprung from any (noble) family of the world.[9]

(13.) By him, who had such a reputation, was begotten on her a son called Ratnapāla, who gained renown because his people justly concluded that a jewel-like king would, by his good qualities, foster the most worthy among them.[10]

(14.) By reason of the elephants' pearls, carried forth by the impetus of the unrestrainable stream of blood running from the split foreheads of the elephants of his enemies,[11] his (*i.e.*, Ratnapāla's) battle-field looked beautiful like a market-place strewn with the stores of merchants, and ruby-coloured through (the blood of) the slain.[12]

(15.) Then having placed him (*i.e.*, Ratnapāla) on the throne to be to the dynasty of Naraka what the sun is to the lotuses, he (*i.e.*, Brahmapāla), the spotless champion, went to heaven; for noble-minded men who know the good and the evil of the world know to do that which is suitable to the occasion.[13]

(Second Plate: obverse: line 28: Prose.) In his capital, the heat (of the weather) was relieved by the copious showers of ruttish water flowing from the temples of his troops of lusty (ware-)elephants which had been presented to him by hundreds of kings conquered by the power of his arms entwined in clusters of flashes of his sharp sword. Though

[8] Brahmapāla appears to have been of a mild and peaceable disposition; and this is the way that the poets expresses that fact. His son Ratnapāla formed the strongest contrast to him, being a very strong and warlike ruler, with a very long reign.

[9] There is here a play on the word *kula* or '(good) family'. *Kula-dēvī* means a (goddess or) queen of good family or of all good families.

[10] There is here a play on the word *ratna* or 'jewel.' A *ratna-upama* or 'jewel like' prince may be expected to become a *ratna-pāla* or 'jewel-protecting' king.

[11] This refers to the well-known Indian fable of certain pearls which are found in the frontal protuberances of certain elephants.

[12] Both grants read *pādmarāgī*. The correct form, however, would seem to be *pādmarāgā*.

[13] The emendation *saṁvidratē* was suggested by Pandit Hara Prasad Shastri.

(that capital) was crowded with a dense forest, as it were, of arms of his brave soldiers who were hankering after the plunder of the camps of all his enemies, yet was it fit to be inhabited by wealthy people (merchants.) (In it) the disk of the sun was hid[14] (from view) by the thousands of plastered turrets which are rendered still whiter by the nectar-like[15] smiles of the love-drunk fair damsels (standing on them). It was frequented by many hundreds of well-to-do people[16], just as a forest planted on the heights of the Malaya mountains (is frequented) by snakes. It is adorned by learned men, religious preceptors and poets who have made it their place of resort, just as the sky is adorned by Mercury, Jupiter and Venus.[17] It resembles the summit of mount Kailāsa in being the residence of the Paramēçvara (*i.e.*, supreme ruler, or Çiva, the supreme God), and in being inhabited by a Vittēça (*i.e.*, a master of wealth, or Kuvēra the God of wealth).[18] Like the cloth which protects the king's broad chest, its boundaries were encompassed by a rampart, furnished with a fence strong like that used for the game-birds* of the Çakas, fit to cause chagrin to the king of Gurjara, to give fever to the heads of the untameable elephants of the chief of Gauḍa, to act like bitumen in the earth to the lord of Kērala, to strike awe into the Bāhikas and Tāïkas, to cause discomfiture (lit., pulmonary consumption) to the master of the Deccan country; and generally to serve for the purpose of discomfiting the (king's) enemies. It is rendered beautiful by the river Lauhitya which gives relief to the fair damsels, that after the exertion of sexual enjoyment ascend to the retirement of their stuccoed turrets, by the spray of its current gently wafted up by the breeze charmingly resonant with the prattle of the flocks of love-drunk females of the Kala-haṁsa ducks;

(Second Plate: reverse:) and which (river) also resembles the cloth of the finely wrought flags carried by the elephants of Kailāsa, and

[14] I have adopted the reading *antarhita* in my translation (see text, note 71). The original reads *anta-hṛta*, which would mean 'obstructed by the ends' (or points) of the thousands of pinnacles.

[15] There is here a verbal conceit in the original which is untranslateable. *Saudha* means 'plastered,' and *sudhā* means both 'nectar' and 'whitewash.'

[16] There is here a complicated verbal conceit, which cannot be exactly translated. *Bhōgin* means both a 'well-to-do, pleasure-loving man' and 'a snake.' The Malaya mountains, with its fragrant breezes, will suit the former, while the forest will suit the latter.

[17] Here is again a verbal conceit: *budha* means both 'a learned man' and 'Mercury;' *guru* both 'a religious preceptor' and 'Jupiter,' and *kāvya* both 'a poet' and 'Venus.' The capital was to the men, what the sky is to the planets.

[18] There is here an obvious play on the words *paramēçvara* and *vittēça* which are epithets of the king as well as of a god.

the jewelled mirrors used in their coquetries by the numerous females (*i.e.*, the Apsarases) of the lord of heaven (*i.e.*, Indra). It is an object of respect to merchants who are the owners of numerous (kinds of) wares. Such is the town in which the lord of Prāgjyōtiṣa took up his residence and which he called by the appropriate name of the 'Impregnable one' (*durjaya*). Here dulness might be observed in necklaces, but not in the senses (of the inhabitants); fickleness in apes, but not in their minds; changefulness in the motions of the eyebrows, but not in promises; accidents (happening) to things,[19] but not to the subjects. Here capriciousness might be seen (only) in women; reeling (only) in the gait of women excited with the (tender) intoxication of spring-tide[20]; covetousnoŭs (only) in evil-doers; safe addiction to the sipping of honey (only) in swarms of bees; exceeding devotion to love (only) in Brahmany ducks (*Anas Casarca*); and eating of flesh (only) in wild beasts.[21] In that town, which emulated the residence of Vāsava (*i.e.*, Indra)[22], the king, who resembles the moon in that he makes his virtues to wax, as the moon makes the tides of the encircling ocean to wax, and in that he causes his enemies to experience the deprivation of their wealth, as the moon causes the ponds to experience the deprivation of their lotuses[23]; and who resembles the sun in that he makes his feet to rest on the heads of his enemies, as the sun makes his rays to rest on the summits of the mountains,[24] and in that he delights in making his copper-mines lucrative, as the sun makes the lotus-ponds brilliant[25]: who, being a Paramēçvara (or paramount sovereign), takes pleasure in (the country of) Kāmarūpa; who, though being of the Bhauma (*i.e.*, of Naraka's) race, delights in being the enemy of the Dānavas (or demons); who, being a *Puruṣōttama* or 'perfect man,' does not act as a *Janārdana*[26]

19 There is a double meaning in *s-ōpasargatā dhātuṣu* which may be also translated 'the prefixing of prepositions (*upasarga*) to verbal roots (*dhātu*).'

20 *Madhu-mada* might also mean 'intoxication with wine.'

21 I have inserted "only," because probably oppositions are intended here just as in the preceding passage. Thus "capriciousness in women but not in men;" "reeling in love-drunk women but not in wine-drunk men;" "covetousness in evil-doers but not in other citizens;" "eating of flesh in wild beasts but not in men;" etc.

22 I propose to read *Vāsav-āvāsa-sparddhini*. The Suālkuchī grant reads *Vāsav-āsparddhini*.

23 *Padma* is the lotus which closes at night, but it also signifies the wealth of Kuvēra, and hence 'wealth' generally.

24 *Pāda* means both 'a foot' and 'a ray;' and *bhū-bhṛt* means both 'a king' and 'a mountain.'

25 *Kamal-ākara* means both 'a lotus-pond' and 'a copper-mine.'

26 There is here an untranslateable play on the words *puruṣōttama* and *janārdana*. Both are epithets of *Viṣṇu*, who is called *puruṣōttama* or 'the best of men,' but also

(or troubler of his subjects); who, though being a valiant man, walks (leisurely) like an elephant: whose figure is such as to outdo Manmatha (or the god of love); whose profundity such as to put into the shade the ocean; whose intelligence[27] such as to be a guarantee of the conquest of the world; whose valour such as to surpass Skanda (or the god of war): who is an Arjuna in fame, a Bhīmasēna in war, a Kṛtānta (or god of death) in wrath, a forest-conflagration in destroying his plant-like adversaries:[28] who is the moon in the sky of learning, the (sweet) breeze of the Malaya mountains in the midst of the jasmin-like[29] men of good birth, the sun in eclipsing his enemies, the mountain of the East[30] in the successful advancement of his friends: this king, the *Paramēçvara, Parama-bhaṭṭāraka, Mahārājādhirāja,* the illustrious **Ratnapāla** Varma-dēva, who meditates at the feet of the *Mahārājādhirāja,* the illustrious **Brahmapāla** Varma-dēva, may he prosper.

(Second Plate: reverse; line 52.) With reference to the land producing two thousand (measures of) rice, and the fields with the clusters of gourds, together with the inferior land of the hamlet of Vāmadēva, (the whole) situated on the northern bank (of the Brahmaputra), within the district of the "Thirteen Villages," the king sends his greetings and commands to all and several who reside (there): to the

janārdana or 'the troubler of men,' because he excites or agitates them. The king, on the contrary, is declared to be a *puruṣōttama,* but not a *janārdana.* There is, in fact, a verbal conceit involved, in every one of the phrases descriptive of the king. Thus *paramēçvara* is an epithet of Çiva who is an ascetic and takes no pleasure in *kāma-rūpa* (or attractive things); the king, on the contrary, though he is a *paramēçvara,* or rather because he is *paramēçvara* or 'supreme ruler,' takes pleasure in Kāma-rūpa (his country). Again Naraka was himself a Dānava, but the king, though of Naraka's race, delights in being an enemy of the Dānavas. But the word *dānavāri* may also be divided into *dāna* or 'gift,' and *vāri* or 'water,' *i.e.*, the water, the out-pouring of which is symbolical of the grant of a gift. In that case the passage means that the king, though of Naraka's (*i.e.*, of Dānava) race, yet delights in giving presents to Brāhmans.

[27] I propose to read *dhīryaṁ,* because *vīryaṁ* recurs immediately in the following sentence. *V* and *dh* are apt to be confounded in writing.

[28] There is an untranslateable conceit in the word *vīrudhi,* which may also be spelt *virudhi.* Spelt *vīrudh,* the word means 'a plant;' spelt *virudh,* it means 'stopping.' With the latter spelling, the passage would mean that the king is like a forest-fire in stopping his enemies.

[29] *Sumanas* may be any flower, but especially the sweet-scented *Jasminum grandiflorum.* The Malaya mountains were famous for their breezes laden with the sweet scent of their fauna. The king, in the midst of his flower-like aristocracy, wafts, as it were, their sweet scent over the country.

[30] There is a verbal conceit in *mitrōdgama* which may also mean 'the rising of the sun;' that is, what the eastern mountains are to the rising sun, that the king is to the advancement of his friends.

(common) people of the Brāhman and other castes, headed by the district revenue officers and their clerks, as well as to the other (higher-class) people, such as the Rājanakas, Rājaputras, Rājavallabhas, etc., and above them the Rāṇakas, Rājñis, and Rājas; and, in fact, to all who may reside there in future at any time.

Be it known to you, that this land, together with its houses, paddy-fields, dry land, water, cattle-pastures, refuse-lands, etc., of whatever kind it may be, inclusive of any place within its borders, and freed from all worries on account of the fastening of elephants, the fastening of boats, the searching for thieves, the inflicting of punishments, the tenant's taxes, the imposts for various causes, and the pasturing of animals, such as elephants, horses, camels, cattle, buffalos, goats and sheep, as set forth in this charter :— [31]

(Third Plate: line 58: verse 1.) There was a Brāhman in the land, Dēvadatta, of the Pārāsara Gōtra and the Kāṇva çākhā; a leader among the Vājasanēyakas, whom on having found to be the foremost vedic scholar, the Vēdas, in their threefold division[32], felt themselves satisfied.

(2.) He had a son, Sadgaṇgādatta, richly endowed with (every) virtue, who ever kept the holy fire burning (in his house), and at the sight of whose devotion to the six holy duties[33] a multitude of people were established in their faith in the whole body of Brāhmans from Bhṛgu downwards.

(3.) He had a wife, Çyāmāyikā, devoted to her husband and endowed with (every) virtue, who shines like the streak (crescent or quarter) of the moon, pure in form and dispelling the darkness.

(4.) From her was born a son, Vīradatta, a leader among the learned in the Çāstras, and fearful of (committing) any offence, on the experience of whose deep-seated piety and formidable intellect the Kali age felt, as it were, humbled.

(5.) To him, on the Viṣṇupadī Saṇkrānti,[34] in the twenty-fifth year of my reign, (this land) is given by me for the sake of the good and the glory of my father and of myself.

31 The sentence which breaks off here, is resumed below in verse 5.

32 Referring either to the three Vēdas, or to the three vedic sciences of hymn, sacrifice and song. The reading *ākṛt-ārthāyitam*, however, is not quite intelligible to me.

33 The six duties are: studying and teaching the Vēdas, offering sacrifices and conducting them for others, giving and receiving gifts.

34 There are four of these; *viz.*, the instants of the sun's entrance into the four Hindū signs *vṛṣa* (taurus), *siṁha* (leo), *vṛçika* (scorpion) and *kumbha* (aquarius) which are also the beginnings for the four months *Jyēṣṭha*, *Bhādrapada*, *Mārgaçīrṣa* and *Phālguna*. The first of these is probably intended here.

(Its) boundaries (are as follows): On the east, the Çālmalī-tree[35] on the big dike; on the south-east, the Çālmalī-tree standing on the steep bank (of the river Brahmaputra) by the anchorage of the boats for the Pāṭhī fish of the Rūṣi-class;[36] on the south the Badarī-tree by the same anchorage of boats; on the south-west the Kāçimbala-tree by the same anchorage of boats; on the west the Āçvatha-tree standing on the steep bank (of the river); at the bend to the north-west, the dike of the fields, as well as a Kāçimbala-tree; on the north-west the Hijjala-tree on the dike of the fields; at the bend to the east and north, the dike of the fields and a pair of Çālmalī-trees; further at the bend to the east and south, the dike of the fields and a pair of Kāçimbala-trees; at the slight bend to the east and south, the dike of the fields and a pair of Çālmalī-trees; on the north, the Kāçimbala-tree on the big dike; and on the north-east, a Vētasa-tree on the big dike.

The Seal.

Hail! The lord of Prāgjyōtiṣa, the Mahārāj-ādhirāja, the illustrious **Ratnapāla** Varma Dēva.

II. The Suālkuchī Grant.

This grant and its seal exactly resemble the Gauhaṭī and Bargāon grants, as may be seen from the photographs (Plates XII and XIII). The plates measure $12\frac{1}{16}$ by $8\frac{1}{4}$ inches and are protected by a slightly raised rim on all four sides. The seal measures $4\frac{3}{16}$ by $3\frac{1}{8}$ inches.

The grant is in a rather bad state of preservation. Originally there were three plates. The first plate is missing, and consequently the inscription on the outer (or obverse side) of the second plate has greatly suffered from corrosion. In addition, there has been applied much injudicious cleaning, before the plates were placed in my hands, in consequence of which the inscription throughout the grant has been rendered very difficult of decipherment. In fact, it would have been impossible to fully decipher it, but for the help afforded by the Bargāon grant, with the greater part of which happily the Suālkuchī grant is

[35] The trees here mentioned are: Çālmalī, *Bombax malabaricum*; Badarī, *Zizyphus Jujuba* or Jujube tree; Kāçimbala, an inferior kind of Çimbala, which I cannot identify; Āçvatha, *Ficus religiosa*; Hijjala, *Barringtonia acutangula*; Vētasa, *Calamus Rotang*.

[36] The *pāṭhī* is a kind of sheat-fish (*Silurus Pelorius*), also called *pāṭhīna*, and in Bangālī *rōyāl*. The term *rāṣi* I cannot identify; it might be connected with Sanskrit *rōhiṣa*.

identical. The only difference appears to be in the statements referring to the land and the person to whom the land was granted.

The two sides of the first (originally second) plate have 19 lines each. The second (originally third) plate has 7 lines. The inscription on the obverse of the former plate probably commenced with the word *phala* on l. 21 of the obverse of the second plate of the Bargāon grant. The reverse of that plate commences with the word [*pri-*]*yānuvarttanaṁ*, the syllable *pri* being at the end of the obverse side; and this word stands on line 43 of the reverse of the second plate of the Bargāon grant. The formal part of the Suālkuchī grant ends in its 37th line (the last but one on the reverse side of the existing first plate) with the phrase *çāsanī-kṛtya*, which stands in the 58th line (the first of the 3rd plate of the Bargāon grant). From here the remainder of the Suālkuchī grant is occupied with the portion peculiar to it, describing the grantee and the granted land.

The mechanical execution of the Suālkuchī grant is, if anything, still more slovenly and inaccurate than that of the Bargāon grant. A glance over the extracts, given below, will show numerous blunders. There are, however, a few variants, which appear to be genuine differences of composition; *e.g.*, l. 14, *kalahansa-gāminī* (for *kalahaṁsa-gāminī*) 'females walking like kalahaṁsa geese,' l. 24, *Bhīṣmō dhanuṣi*; or which actually offer more suitable readings, as in l. 11, *kṛḍā-çakuni* (for *krīḍā-çakuni*), and in l. 33, *mahiṣ-āj-āvika*.

Palaeographically the Suālkuchī grant does not differ in any way from the Bargāon grant. The guttural nasal *ṅ* is throughout made without a ringlet. Only once, in l. 12, *taṅka*, it is represented by the anusvāra; but this case is not above suspicion, because the reading here is defective; see the extract below. The anusvāra is formed by a ringlet and placed above the line. The special final form for *n* occurs in l. 10, *jānapadān*, and l. 11, *prabhṛtīn* and *sarvvān*. The special final form of *t* occurs in l. 21, *bhṛt*, and in l. 34 *'bhūt*. The special final form of *m* occurs, twice, in ll. 23 and 24 *vairyam*; as a rule, however, the anusvāra is used; thus in l. 9, *maṇḍalaṁ*, l. 10, *alaṅkāraṁ*, l. 16, *sārthānāṁ*, and l. 23, *gambhīrya*[*ṁ*], where the Bargāon grant has the special form. The initial short *i*, made by two ringlets placed above a hook, occurs in ll. 3 and 34, *iti*, l. 40, *iṣṭa*; but in l. 21, the hiatus with *iva*, which the Bargāon grant shows, is avoided in the Suālkuchī grant by the insertion of a euphonic *r*. The avagraha occurs in l. 25, *çūryō'ri*, where it is omitted in the Bargāon grant. It appears also to be intended, in l. 40, by the mark of interpunctuation.

Regarding the probable date of the Suālkuchī grant, see the remarks on the Bargāon grant. It is not dated in any era, but professes to have been issued in the 26th year of the reign of Ratnapāla.

In the following transcript I shall only quote such portions of the Suālkuchī grant as differ in any respect from the corresponding portions of the Bargāon grant, or as show the same irregularities. The portion peculiar to the Suālkuchī grant is transcribed in full.

Text.[1]

Second Plate: Obverse.

1, phala etc., ending with saṁprāptā-lakṣmyāḥ sthitam=i- (see Bargāon grant, ll. 21 and 22).

2, va ..... apparently ratnōpamō narapati etc. (cf. l. 23.)

4, ... padma-rāgi çōbhētā vīra-vaṇijāṁ nikaraiḥ etc. (cf. ll. 25, 26).

5, ... bhānuṁ samvēçya tā (*sic*) etc. (cf. l. 127).

6, ... sat-ōpāyanī sa-mada etc., omitting kṛta (cf. l. 29).

7, ... syāudi-dāmvu (*sic*) ..... samupasamitu (*sic*) ..... luṇṭanal-lampaṭa etc. (cf. ll. 29, 30).

8, ... nivāsa-yōgyaṁ | ..... sundarī-chudhā (*sic*) ..... sikhar-ādhi-ruḍha-sahasr-ānta etc. (cf. ll. 31, 32).

9, ... sthali-ruhaṁ | kāuanēm=iv=ānēka-bhōgi-sata ..... nabhō-vammēvāpta (*sic*) (cf. l. 32, 33).

11, ... kṛḍā-çakuni-dṛḍha[2] ..... prajvarēṇa etc. (cf. l. 34).

12, ... Kēralē | sa-calā-çilājatuḥ nā (*sic*) Vāhika-taṁka etc., omitting Tāīka (cf. l. 35).

13, ... rājajakṣmaṇā | ..... vakṣaḥ | kapāṭa etc. (l. 35, 36).

14, ... kalahaṁsa-gāminī | kulaḥ kuṇita-prēçala (*sic*) ..... ōrmmi | çikar-āsāram=upaçamitā etc. (cf. ll. 36, 37).

15, ... ādhirūḍha | ..... paṭē nākiça (*sic*) (cf. ll. 37, 38).

76, ... anēkamanakṣa-pati etc. (cf. l. 39).

17, ... adhyuvāsya (*sic*) | ..... yaṣṭiṣu |[3] n-ēndrayēṣu etc. (cf. l. 40).

Second Plate: Reverse.

20, y-ānuvarttanaṁ | ... piçitā svāpadēṣu | ... Vāsav-āsparddhini | etc., omitting çitā (cf. ll. 43, 44).

21, ṇḍalaṁ | çatru-sarasāṁ darppita ..... mārttaṇḍa r=iva bhū-bhṛt-chirō-nivēçita-pādaṁ | ..... ōdbhāsana-lā- (cf. ll. 44, 45).

[1] From the original plates.

[2] The akṣara *ḍha* stands below the line.

[3] This mark of interpunctuation is placed almost regularly after each clause.

22, laçaç[4]=ca ..... kāmārūpā | nandi ..... dānavāri | paruṣōttamō (*sic*) py=adanārddanō | etc. (cf. ll. 46, 47).

23, pi mattēha-gāmī ya | sā ..... rūpā | ..... gambhīrya | ... āsansi-vairyam | etc. (cf. ll. 47, 48).

24, ndi-vairyam | ..... yaçaṣi | Bhīṣmō dhanuṣi | etc. (cf. ll. 48, 49).

25, ... Çūryō'ri-tamasi |[3] etc. (cf. l. 50).

26, sampadī ya | ..... pādānudhyātaḥ paramēçvaraḥ parama-satāra- (*sic*) (cf. ll. 50, 51).

27, ... çrīmān=**Ratnapāla**-varmma-dēvaḥ kuçalī ॥ ❁ ॥ Kala-

28, ṇgā-viṣay-āntaḥ-pati-dhānya-tri-sahasr-ōtpattika-ha-kṛṣṭā[5]-bhūmau yathāyatham samupasthita-v(b)rā-

29, hmaṇ-ādi etc. (cf. l. 54).

33, ... nānā-nimitt ..... mahiṣ-āj-āvika-pracāra-prabhṛtīnām etc. (cf. ll. 57 58).

34, ... çāsanī-kṛtya ॥ [6]Bhāradvāja-sa-gōtrō Vājasanēyī Çṛkāṇva[7] çākhō'bhūt | bhaṭṭō V(b)ala-dēva iti khyāta-

35, ḥ çruta-vinaya-sampannaḥ ॥ [1 ॥] Āsīt-pratihata-narakō v(b)a-hu-vibudha-vandyamāna-caraṇa-yugmaḥ | × × × × × × ma × × × ×.[8]

36, s=tat-putrō Vāsudēv-ākhyaḥ ॥ [2 ॥] Lakṣmīr=iva jana-sēvyā bhāry=āsīd=asya vallabhā sādhvī | c=Chēppāyik=ēti viditā sad-dharmmā va-

37, rṇa-bhūṣaṇā[9] ramyā ॥ [3 ॥] [10]Tāsyām=ajāyata sutō bhuvi Kāma-dēvaḥ çaktyā[11] manō-ramatayā jita-kāma-dēhaḥ | kāntiḥ

38, samasta bhuvanam hi çaçāṅka-çubhrā yasy=āniçam=bhramati bhūri vibhūṣita-dyauḥ ॥ [4 ॥][12] Pitrōḥ svam=puṇyam=uddiçya [13]× × × × ×

Third Plate: Obverse.

39, — ᴗ — | mayā dattā dvijāy=āsyai rājyē ṣaḍviṅçad-āv(b)dikē ॥ [5 ॥] Asyās=sīmā pūrvvēṇa Candē-naukī(nā)[14]

4 The first akṣara ça is superfluous.
5 Perhaps read *hala-kṛṣṭa*.
6 Metre of verses 1–3: *Āryā*.
7 Read *Çrīkāṇva*.
8 Ten akṣaras are here illegible.
9 The reading is uncertain.
10 Metre: *Vasanta-tilakā*.
11 Reading uncertain.
12 Metre: *Çlōka*.
13 Here 8 akṣaras, or a quarter-verse, are illegible.
14 The bracketed portions are uncertain.

40, (n=s)aha-sīmni iṣṭak(ēndrasy)=ōpari ça(va)ra-mūla[15] | khōḍ-āmv(b)ra-vṛkṣau | pūrvva-dakṣiṇēna (dakṣi[16])-pāṭī-nauki-sa-

41, ha-sīmni Vētasa-vṛkṣaḥ | dakṣiṇēna Sadhava-naukī-saha-sīmni Hijala-vṛkṣaḥ | dakṣiṇa-paçcimēna (Bhayaka)-

42, ma-vṛkṣaḥ | paçcimēna Candē-naukī-sahạ-sīmni adhunā-rōpita-Çālmalī-vṛkṣah | paçcim-ōttarēṇa Kalaṇgā-

43, daṇḍi-dakṣiṇa-pāṭaḥ | pūrvva-ga-vakrēṇa Sadhava-Kalaṇgā-daṇḍi-dakṣiṇa-pāṭa-stha-Cōraka-vṛkṣaḥ | dakṣiṇa-ga-vakrē-

44, ṇa kula-sōnt-ōttara-pāṭaḥ | pūrvva-ga-vakrēṇa Sadhava-kula-sōnt-ōttara-pāṭa-stha-Varuṇa-vṛkṣaḥ | uttara-ga-vakrēṇa Hija-

45, la-vṛkṣaḥ | uttarēṇa Diyamv(b)ārāñjal-ōttara-pāṭaḥ | uttara-pūrvvēṇ=āli-mastaka-Vētasaç=c=ēti ||

The Seal.

(1) Ōṁ svasti Prāgjyōtiṣ-ādhipaty-anva-
(2) yō mahārāj-ādhirāja-çrī-**Ratna**-
(3) **pāla**-varmma-dēvaḥ ||

TRANSLATION.

Second Plate : Reverse.

(Line 34; verse 1.) There was a learned Brāhman, called Baladēva, full of holy lore and good conduct, who belonged to Bhāradvāja's gōtra and the Çrīkāṇṭha çākhā of the Vājasanēyins.

(2) He had a son, Vāsudēva by name,.....[17], who (by his sanctity) had exempted himself from hell, and whose feet were revered by many learned men.

(3) He had a loving and chaste wife who, like Lakṣmī (the goddess of good fortune), was honoured by the people. She was known by the name of Chēppāyikā,[18] a woman charming, true in faith, and an ornament to her caste.

(4) From her was born a son Kāmadēva who on earth by his power and his charm excels Kāma, the god of love; for his beauty, brilliant like the moon, and illuminating the heavens, incessantly wanders through the whole world.

[15] Probably read *mūlē 'khōḍ-āmbra.*

[16] Perhaps read *dakṣiṇa.*

[17] Here the original text is illegible. There are 11 akṣaras—all short, as the metre shows,—of which only one (the seventh) *ma* is legible.

[18] This appears to be a vernacular name, the Sanskrit equivalent of which I do not know.

(5) With a view to my parents' as well as my own welfare,..... ....., (this land) is given by me to this Brāhman, in the twenty-sixth year of my reign.

Its boundaries are (as follows): On the East, at the anchorage of the boats of the Candē men, and at the foot of the Saravā above the brickfield there are a walnut and a mango tree. On the North-east, at the anchorage of the boats of the men (located) on the southern terrace, there is a Vētasa-tree.[19] On the South, at the anchorage of the boats of the Sadhava men, there stands a Hijjala-tree. On the South-west, there stands a Bhayakama(?)tree. On the West, at the anchorage of the boats of the Candē men, there stands the Çālmalī-tree which has been recently planted. On the North-west, there is the southern terrace of the boatmen of Kalaṇgā. At the bend on the East, there is the Cōraka tree, standing on the southern terrace of the boatmen of the Sadhava (portion of) Kalaṇgā. At the bend on the South, there is the northern terrace of the Sōnta[20] of the (river's) bank. At the bend on the East, there is the Varuṇa-tree, standing on the northern terrace of the Sōnta of the Sadhava (portion of the) river's bank. At the bend on the North, there is a Hijjala tree. On the North, there is the northern terrace of the Diyambārāñjaha, and on the North-east, a Vētasa-tree on the highest point of the dike.

The Seal.

Ōṁ! Hail! the Mahārāj-ādhirāja, of the illustrious race of the lords of Prāgjyōtiṣa, the illustrious **Ratnapāla** Varma Dēva.

[19] Regarding the identity of the trees in this list, see *ante*, page 120, footnote 35. Of the Bhayakama tree I can make nothing, but the akṣaras *bhayaka* are uncertain. I am unable to identify the Cōraka tree. It is commonly identified with *Trigonella corniculata* or *Andropogon aciculoris*; these, however, are mere plants.

[20] I do not know what *sōnta* means. It corresponds to *daṇḍi* in the preceding clause.

A Note on the Identity of the great Tsang-po of Tibet with the Dihong.—*By* Sarat Chandra Das, C.I.E., Rai Bahādur.

[Read February, 1897.]

Sir Clements Markham, President of the Royal Geographical Society in his learned introduction to "Narratives of the Mission of George Bogle to Tibet," regarding the course of the Tsang-po wrote as follows:—"Beyond the point where the Lhasa route crosses the river, in longitude 90° 40' E., the course of the Brahmaputra within the mountains is entirely unknown for a distance of about 400 miles, when, under the name of Dihong, the mighty stream emerges into the valley of Assam and becomes the Brahmaputra of the plains. Yet there can be no reasonable doubt that the Tsang-po of great Tibet and the Brahmaputra of the plains are one and the same river."

This question has occupied the attention of geographers for upwards of a century. In his instructions, dated 1774, Warren Hastings specially enjoined Mr. Bogle to inform himself respecting the course of the Brahmaputra. D'Anville, and afterwards Klaproth, believed that the Tibet river was the upper course of the Irrawaddy. In 1825 Captains Bulton and Wilcox were sent to explore its course. Bulton followed up the course of the Dihong, until he was stopped by wild tribes, while Wilcox crossed the water-parting towards Burma, and reached the banks of the Irrawaddy. From the point reached by Bulton on the Dihong, to the place where Manning crossed the Tsang-po, there is an interval of about 400 miles, and a difference of level of 11,000 feet. This interval was entirely unknown till 1882 when I explored up to Sangri Khamar, a place situated to the east of the town of Chethang on the Tsang-po where it crosses 92° Lg., and Lama Ugyen Gyatsho, about 50 miles farther east up to the confines of the province of Kongbu; and Kunthup has done, though not scientifically, further 200 miles, so that out of 400 now only about 50 miles remain to be explored.

In July 1880, a Lama of Gya-rong was despatched by the late

Captain Harman from Darjeeling to Tibet with orders to explore the country below Gyala Sing-dong and trace the great Tsang-po to the plains of India, or failing this, to throw marked logs into the stream at the lowest point reached. It was intended that due notice should be given by the Lama to Captain Harman of the period during which the logs were daily to be cast into the river, so that he might set watches at the place where the Dihong debouches into Assam, and thus prove the identity or otherwise of the great river of Tibet with the Brahmaputra. Kunthup, a native of Sikkim, who had previously accompanied the explorer Nima Sring to Gyala Sing-dong and who has since traversed Bhutān with Rinzing, was sent with the Gya-rong Lama as assistant. The proposed arrangements for casting logs into the Tsang-po fell through owing to the delinquency of the Lama, who having sold Kunthup as a slave in the Pema-koi country decamped to his home in Gya-rong within the Chinese frontier.

Kunthup having escaped from the hands of his master, reached Onlek a short stage from Mir Padam, or Miri Padam, a village situated on a plain on the Tsang-po, a resort of traders from Assam, and the abode of the Miri and Padam tribes, who are known to inhabit the country near the place where the Dihong breaks through the hills into Assam. He was informed at Onlek that Miri Padam was about three days' journey or 35 miles from the nearest plains of India. Kunthup also saw the haze of India from Onlek in an easterly direction when looking down the river. According to native report and also legend, the Tsang-po enters a deep rocky gorge at the foot of a rocky mountain which has the appearance of a lion's face and is therefore called Sing-dong, from *sing* a lion and *dong* a face. Kunthup describes the falls of the Tsang-po below the Pema-koi monastery as a cascade of some 150 feet in height, and mentions the prismatic colours of the spray hanging over the dark basin or lake below the cliff. This rock is called Shin-jē-shējal, *i. e.*, the place of interview with the Lord of the Dead. *Shin* the dead, *jē* lord, and *shē-jal* an interview.

Since then Mr. Needham, a political officer, resident near Sudya in Assam, has explored a part of the mountainous country, inhabited by Mishmi and other wild tribes, up to the borders of Za-yul, but has not succeeded in following up the course of the Dihong. The inscription before us and the letter of Mr. Barnes, quoted below, go to prove that the Dihong is the great Tsang-po, as it was conjectured by the late General Walker. The wooden block on which the inscription is, came down from the Tsang-po. It must have belonged to some one of the Ñiŋ-ma monasteries of Tibet or to the monastery of Pema-koi, the last of the Buddhist institutions of Tibet, situated to the further East of

Tibet. My friend and tutor Lama Sherab resided twelve years at the Pema-koi monastery and knows the country well. The charm contained in the inscription is corrupt Sanskrit written in Tibetan and repeated twenty-five times. It belongs to the Ñiṅ-ma-pa or the older red-cap School of Tibet. The following is a transcript :—

(1). ཨོཾ བཛྲ་སཏྭ་སམ་ཡ་མ་ནུ་པཱ་ལ་ཡ་ བཛྲ་སཏྭ་ ཏྭེ ནོ་ པ་ཏི་ཥྛ་ དྲི་ཌྷོ་ མེ་ བྷ་ཝ་སུ་ ཏོ་ཥྱོ་ མེ་ བྷ་ཝ་སུ་ པོ་ཥྱོ།

(2.) མེ་ བྷ་ཝ་ ཨ་ནུ་རཀྟོ་ མེ་ བྷ་ཝ་ སརྦ་སིདྡྷི་ མེ་ པྲ་ཡ་ཙ་ཙྪ་ སརྦ་ ཀརྨ་སུ་ཙ་ མེ་ ཙིཏྟཾ་ ཤྲེ་ཡཿ ཀུ་རུ།

(3.) ཧཱུྃ་ཧ་ཧ་ཧ་ཧ་ཧོཿ། བྷ་ག་ཝན་ སརྦ་ད་ཐཱ་ག་ཏ་ བཛྲཾ་ མེ་ མུ་ཉྩ་ བཛྲི་ བྷ་ཝ་ མ་ཧཱ་སམ་ཡ་ སཏྭ་ཨཱཿ།།

(1.) Ōṁ, vajrasatva! samayam=anupālaya, vajrasatva! tvē nō patiṣṭha; driḍhō mē bhavasu, toṣyō mē bhavasu, pōṣyō.

(2.) mē bhava, anuraktō mē bhava, sarvasiddhi mē prayaccha, sarvakarmasu ca mē cittaṁ çrēyaḥ kuru.

(3.) Hūṁ-ha-ha-ha-ha-hōḥ! Bhagavan Sarva-Tathāgata! vajram mē muñca, vajri bhava mahāsamaya satva-āḥ!

Translation :

(1.) Ōṁ, vajrasattva! keep thy duties; O vajrasattva, ground us upon thee; be strong to me, be delighted with me.

(2.) Be kind unto me, be cheerful unto me; grant me every success, and in all my actions make pure my heart!

Line 3 seems rather untranslatable.

The letter of Mr. H. C. Barnes, Assistant Commissioner of Dibrugarh, dated the 22nd October, 1896, is as follows :—

"I enclose a print taken from a piece of wood found in the Brahmaputra a few miles above Dibrugarh a short time ago. When brought in, it appeared that the block was meant for printing from, as, though the surface of the letters was clean, the whole of the carved out portion of the wood, *i.e.*, the space between the letters, was covered with what

looked like ink. Moreover, though no one could say what the writing was by mere inspection of the block; some Khamptis on seeing a print taken from it, declared that it was a Lama, *i.e.*, Tibetan, writing. You will observe that the lines are similar, so that a translation of one will give the meaning of the whole. I should be obliged if you would send me a translation and also inform me what the block was used for. If my conjecture that it was used for printing from is wrong and the Khamptis have misled me, I can send you a rubbing of the block.

"The block is about $2\frac{1}{2}$ inches thick and it has no marks on the sides or back to show that it has ever been fastened to anything else. It is supposed to have been brought down the Dihong by the last flood, which was probably caused by the breaking through of a dam formed across the Dihong by a former landslip. The flood rose to a great height in one night in fine weather and no other river came down in flood except the Dihong. The piece of wood was found by an Assamese who was looking for firewood."

Ser. No.	Name of King.	Date A. D. (about.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
			r	*y*		Anusvāra		Final *t*				Final *n*				Final *m*	
								Full	Truncated	Special		Full		Truncated	Special	Full	Special
1	Dharma Pāla	840 — 875															
2	Nārāyaṇa Pāla	925 — 950															
3	Bala Varman	975 — 1000															
4	Ratna Pāla	1010 — 1050															
5	Indra Pāla	1050 — 1070															
6	Vijaya Sēna	1070 — 1090															
7	Lakṣmaṇa Sēna	1119 — 1145															
8	Vaidya Dēva	1140 — 1160															
9	Modern Bangālī																

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CONSPECTUS OF TEST-LETTERS.

Litho., S. I. O. Calcutta.